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Gleanings in Bee Culture

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Some Problems of Bee Shippers

By Morley Pettit

The first problem of a bee shipper is to get well located. This doesn't mean to find a successfull shipper and settle down beside him. The territory suitable for producing and shipping package bees extends almost continuously from the Atlantic to the Pacific along the southern tier of states. Just as in honey production, I am sure some shippers often feel that they would have better success somewhere else, but moving costs too much to be undertaken lightly, and there are a great many points to be considered in deciding whether a location is good or not.

To me an ideal package location should have a good summer flow for making increase, requeening, and filling up for winter. If a surplus could be produced in summer and fall to extract and sell, why so much the better. There would also be considerable pollen stored in the fall in my ideal location, but compared to what we get in a clover region that seems too much to hope for. Pollen and nectar would start coming in January and would continue just enough to stimulate brooding right through to June. A heavy flow before or during the shipping season is almost as bad as no flow. The problem here is that no two seasons in the same place are quite alike, and some of the largest shippers deliberately choose locations with no early heavy flow and then equip each hive with a division-board feeder to provide for the seasons when the spring flow fails entirely.

Under these conditions there is a difference of opinion as to the type of hive to use and there is room for the old convention arguments about 8-frame, vs 10-frame or larger, and single vs double brood chambers. If I were starting the package bee business over again I would be inclined to make hives taking Langstroth frames just the same, but I would make them square so they would hold twelve frames spaced wide, or eleven frames and a feeder.

Then I would place them crosswise on the bottom-board for greater warmth in spring. There is no doubt that a single brood chamber

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saves a great deal of labor at shipping time and in handling frames. Shipping checks early swarming and a moderate summer flow just fills these combs for winter.

Shipping on Schedule

With multiple apiaries and frequent visits to fill cages for shipping, transportation is an even greater problem than in honey production. In the latter we can often wait for bad roads to dry, but orders for bees must go the days promised regardless. The rubber and gas situation did have us worried but we are now assured that enough of each will be available for essential use, and also that beekeeping is considered an essential occupation. Express train service is a part of the transportation problem. It is desirable to have a nice town to live in, for while a young bachelor beekeeper may rough it for the sake of good swamp locations, he must be looking forward to making a life as well as a living. The home town must have good express train service. A through train going north should stop daily, not much earlier than nine o'clock, P. M., and preferably near midnight. This gives time to spend a full day caging bees, and then take them to the shop for their queens, feed cans and labels. The shipping season is a terrible rush, but there should be a pause each evening at twilight to look over the day's catch and see that all is well before starting them on the long trip north.

The next problem in bee shipping is the help question. In that respect it is not much different from honey production, or other branches of agriculture whose chief fault is the extremely seasonal nature of the work. If we could use all our help all through the year we could build up a permanent staff of trained helpers, but it is hard to pick up useful help for a short season and leave them to shift for themselves the rest of the year.

The bee shipping business is really divided into three parts. Keeping contact with customers and prospects and answering their many letters, booking the orders and seeing that they are paid for and shipped on time; in short, acting as manager of a mail order business, is one man's job. To care for the colonies that produce the bees, see that they are requeened in summer and prepared for winter, and to take out the yard crew and fill the packages for each day's order by shipping time, is another man-size job. Then there is the rearing of the queens which is a business all by itself.

Most shippers are equipped and manned for all three branches of the business. If the proprietor is office trained he can do a great deal of the office work while acting as his own business manager, and with a helper he may be able to take care of his colonies all through the year except in the shipping season. It is of course a great deal better to have a good beeman permanently employed as foreman. The shop work of making packages will keep him busy when the bees do not.

When shipping starts several extra helpers must be taken on for a period of about two months. The problem is to have them available when needed, and that is where a small home town is often an advantage. Usually around a town there are day laborers who can be picked up if spoken for in advance. If the town is small enough they know you and may have worked for you or some other beekeeper before. It is the shipper's business to have his work so planned that he can use this kind of help. In my case I have found colored help quite satisfactory with a white foreman and at least one colored man who is dependable and has had some experience with bees. How this help question will work out in the spring of '43 remains to be seen.

Rearing Queens

I said the rearing of queens is a business by itself and I consider it so important that I have always left it to highly trained specialists. There are some near me who have their own bees and equipment and spend their own time working as many hours as they choose. I am glad to pay them a good wholesale price for good queens and see them make a good profit when they can. Then when bad weather or other misfortune overtakes them I am thankful it is their risk of loss as well as their chance of gain.

One great big problem in the queen business has been what to do with surplus queens when there is a lull in shipping orders. We have solved that one. When queens are ready to cage and the nuclei are ready for the next batch of cells, we cage them in two-hole cages with candy the size of a pea and no attendants. A special frame to hang

in a super holds 72 queens caged this way packed in with the screens out where bees can feed them without getting at them. These are hung in strong colonies and will be well cared for by the bees for several days. A few queens will die during the first few days; after that almost no deaths occur for a week or more and I reckon that the casualties are weaklings that should be weeded out anyway. A good strong colony will easily care for four such frames, or about three hundred queens for a week or two if necessary and give them back to you looking brighter and happier if possible than when you put them in the hive. There are just two provisos to this method of storing queens that I know of now. There must on no account be any attendant bees caged with the queens, and the colony must be kept well fed if there is a honey flow on. We alternate frames of queens and combs of brood and if the colony-queen happens to be laying in combs next to stored queens, that's okay, except that it is better to cage her, too, as stimulating feed and so many queens may excite swarming.

Problems of Shipping Queens

For putting queens in packages these small cages without attendants are just the thing. I have for years argued with queen breeders about how many attendants to put in. Some seem to think they must pack in all they can. I am convinced that 6 or at most 8 is plenty for mailing in warm weather. I hate to see a caged queen being mauled by the milling of a crowd of attendants. Just as a queen caged with attendants will be neglected in a colony while a queen caged alone will be well cared for, so will a queen caged without attendants in a package arrive in much better condition. This is neither new nor original but it is worth emphasizing.

When the customer reports that the caged queens in the packages received are dull and dopey and the attendants nearly all dead, it is very discouraging. We do not get that kind of report when the caged queens are sent without attendants, but we do often hear that the queens were bright and lively.

This brings us to the perennial problem of disappearance of queens from package colonies after they have been installed for a time. Some shippers have been building up a demand for loose-queen packages based on the argument that bees traveling with their own colony queen loose amongst them will become established in their northern hive with a minimum of queen loss. I believe the strongest advocates of this system never gave a fair trial to the loose-queen introduction of package queens that had traveled without attendants. They certainly have not faced the question of what becomes of the shipper's colonies when he dequeens them just when they need queens most and are in the worst mood to accept them. Loose-queen introduction is quite simple if the bees are gorged and shaken out of the package into the hive. She is dipped in syrup and dumped out with the bees. The hive is closed and not disturbed for at least one week. Ninety-nine times out of a hundred she goes to laying almost immediately. Advantage is taken of the confusion of the shaken bees to give them a queen without delay. To let them take hours to release a queen caged with attendants gives them time to get organized and build up resentment against those attendant bees along with the strange queen who is probably mauled and half ruined when she finally emerges.

These are just a few of the bee shipper's many problems, but I have used more space than I should already so will leave the rest for another time.

Tifton, Georgia.

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"It's from Washington—says we can't make comb honey this year—takes too much rubber."

Recent Investigations on Royal Jelly for Ontario

By G. F. Townsend
Provincial Apiarist for Ontario
(From September, 1942, Canadian Bee Journal)

Scientists for many years have been attracted by the peculiar phenomena associated with the differentiation between the worker and the queen bee, as either may develop from the same egg. At the present time, it is generally accepted that the differentiation is very closely related to the diet. As far back as 1888, Von Planta showed that the food supplied to the queen and worker bee were similar only for the first two days. The food for larvae destined to become workers is changed on the third day to one much richer in carbohydrate material and pollen, while the queen continues to be reared on royal jelly. This fact has more recently been confirmed by Aeppler in 1922 and Elser in 1929.

Experimental Work

With the discovery of the fertility vitamin E, it was thought that possibly royal jelly owed its astonishing sex diffentiating property to the presence of large quantities of this vitamin. In fact, Hill and Burdett in 1932 even claimed to have proven this to be a fact. However, Melampy and Mason in 1936 found several sources of error in this work, and later showed that vitamin E is not present in sufficient quantity to permit the completion of a normal pregnancy in E-deficient female rats when even as much as one gram of royal jelly is fed daily throughout the period of gestation. This work has since been confirmed by several other workers. With these findings, the field of experiment on royal jelly was again thrown wide open.

In 1939, Heyl injected subcutaneously into 21-day-old rats an alkaline extract from royal jelly. These injections were repeated daily for five days. Heyl reported that the injections resulted in increased follicular activity and weight of the ovaries. Melampy, working with whole royal jelly, could not confirm these results, although it is quite possible that during the drying of the royal jelly he had removed all or part of the active material. Similar tests on rats, carried on at the Banting Institute under Dr. C. C. Lucas, revealed negative results. However, observations made at the Banting Institute by myself indicate that the so-called "fat fraction" of royal jelly, when added to the diet of fruit flies, increased the number of eggs laid per day by about 60 per cent. These results may indicate that, if the active substance from royal jelly is present in the fat fraction, its physiological activity is limited to insects only.

Further Results

In 1939, Melampy and Jones published the results of a careful study on the proximate chemical composition and vitamin content of royal jelly. This paper contains the first attempt at a somewhat systematic analysis. Melampy showed that royal jelly contains practically all the nutritive substances required by any animal for development and the maintenance of life. According to this analysis, royal jelly may be quite readily compared to milk in that it consists of protein for building tissue, carbohydrates and fats for energy, and minerals for the building of bone. There was also present at least one vitamin and water. The average values indicated by these workers showed royal jelly to contain 66% moisture, 0.82% ash, 12.3% protein, 5.4% fat and 12.9% total reducing substances or sugars similar to those found in honey. There was also 2.4% undetermined matter. The only vitamin found was the antineuritic B1, in the quantities of 11.5 international units per gram, or as much as is ordinarily found in whole wheat. Royal jelly may be compared to milk in another way, in that both are glandular secretions. Royal Jelly is secreted by the pharyngeal glands in the head of the worker bee, while milk is secreted by the mammary glands in the cow.

Four Main Fractions

Since this very interesting work of Melampy's, Dr. Lucas and I, while working at the Banting Institute, University of Toronto, have broken the

royal jelly down into four main fractions. A fairly complete analysis has been carried out on several of these fractions, and further work is proceeding at the present time at the Banting Institute under Dr. Lucas. The royal jelly was dried and then split into four fractions, two proteins, a carbohydrate fraction, and a so-called "fat fraction". In order to split the royal jelly into these fractions, the following procedure was followed: After drying the royal jelly down to a powder, it was extracted with ether to remove any ether-soluble material. This process should remove all fatty materials, and leave behind sugars, proteins, etc. To remove the sugars, the ether-insoluble material was then suspended in water and dialysed through material something like a sausage casing. The sugars readily pass through this sausage casing and leave behind the proteins. The proteins were then divided into a water-soluble and water-insoluble protein, giving us four fractions in all.

The proteins consisted of one which was soluble in water, and which to that extent might be compared to egg albumin. The other protein was water-insoluble, but was found to be soluble in weak alkalies, and may be compared with casein, which makes up the greater part of the protein found in milk. It has not yet been possible to make an extensive investigation of these proteins, but already several of the essential amino acids have been isolated from one of them.

The carbohydrate fraction consisted mainly of the two sugars which predominate in honey, dextrose and levulose. As well as these, there were traces of acids and nitrogen-containing compounds.

Fat Fraction Most Interesting

The portion of royal jelly ordinarily called the fat fraction proved to be the most interesting. It is obtained by extracting the dried and powdered royal jelly with dry ether. Instead of the usual fats which are dissolved out of ordinary foods by this method, a unique mixture was obtained. Eighty-five per cent or more of this fraction consists of an acid or acids which are not found in the fatty acid class. It can hardly be said, then, that royal jelly contains a fat fraction in the true sense of the word, as we know it in animal foods. This acid, or acids, was isolated from several different portions of royal jelly taken over several years, and each time the acid isolated was found to have the same melting point and equivalent weight. Whether this acid may be the physiologically active material responsible for the sexual development of the queen bee remains to be proven.

Melampy, while working with the fat fraction of royal jelly, found that it exhibited distinct bactericidal properties. This fact was also noticed while working with the fruit flies in that the food in the standard diet of the fruit fly kept much longer when this fraction was added to it.

Conclusions

From the work carried on up to the present time, there are several conclusions which we may draw as to the reason for this marked difference between the worker and queen bee, which apparently is caused by food alone. Firstly, the production of the physiologically active substance may be limited to insects alone, as well as its activity. Before anything definite can be determined about such a substance, it may be necessary to set up a standard technique for biological and physiological analysis of insect foods. Many attempts have been made to rear bees under incubator conditions, but as yet there has been no entirely successful method developed. When this is done, perhaps then we may be able to learn something more definite concerning royal jelly. Secondly, this physiologically active material may be fugitive or passed directly from the worker to the queen, while the royal jelly itself mainly consists of a food very high in tissue building qualities. Then, of course, if there is an active principle there is always the possibility that we have lost it somewhere during the collecting and the treating of the royal jelly. Certain workers claim that the sexual differentiation is purely a nutritional castration, the queen bees alone receiving an adequate diet for sexual development.

Although we may still be far from the truth, each piece of work brings us one step closer to the solution of this fascinating problem, and no research worker who has once been engaged on this problem will be quite satisfied until something more definite is known concerning the chemical and nutritional properties of royal jelly.

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Production and Shipping of Package Bees

By M. S. Fortune

[M. S. Fortune, writer of this article, has had a wide experience in producing honey in Wisconsin, Michigan, and California, also producing and shipping package bees and queens. Since 1935 he has been general manager of around 7500 colonies owned by the Stover Apiaries, large producers and shippers of packages and queens.—Editor.]

Contrary to public opinion the production of package bees and queens requires more future planning and probably more labor per colony than does the production of honey. Most beekeepers think that the package shipper has it rather easy, some must even think that bees are carried in stock on shelves, and all one has to do when an order comes in is to label it and put it on the train.

As soon as one package season is ended, which is usually about July 1st, work must be started for the next year. Colonies at this time are usually at a very low ebb, some being queenless. It is usually necessary to give these help, from the better colonies, in the form of a frame or two of brood; also, they should be given a laying queen. Then during late summer all colonies must be requeened. This is even more important in package production than in raising honey, as a queen must lay continuously at a high rate through March, April, and May to head a good package colony. Also, she must be able to go into winter quarters with an abundance of young bees to get an early start in the spring.

During the late fall and winter months bee shipping cages must be cut and nailed, also queen cages, and very lucky is the shipper who has these all ready when actual bee work starts in the spring, for preparing both of these requires many different operations and takes up a lot of time. Then, too, plans must be made well in advance to have a sufficient number of queens coming out in a steady stream to take care of the packages, as well as have a few extra for mailing to customers with queenless colonies, etc. A good part of this planning has to be done in the dark, as usually only a small percentage of customers place their orders before actual shipping begins.

Scheduling Orders

About April 1st orders will start coming in swarms. The shipper, if he is progressive, has made a conservative estimate of how many packages per day he can get out, basing this on the number and condition of the colonies and what the weather should be. This is done a month or so in advance of the shipping season. A few days later it will be cold and rainy. He starts feeding frantically, but pollen is short, queens slow up or almost quit laying, and the queens will not mate in the queen yard. If this keeps up for several days he begins to hope that it will turn warm gradually, for if it should suddenly clear up the virgins, which have been held in by the weather, will all rush out at one time to mate, and with the ensuing commotion the breeder will be lucky not to lose from twenty-five to fifty percent of them. By this time he is tearing out his hair trying to arrange the booking of orders which are piling up with every mail. Jim Jones, Billy Brown, and Guy Green are all wanting their bees shipped on April 15th, 20th, 25th, May 1st or 10th, forgetting that there are a lot of days in between these dates which would probably serve just as well. If a customer says to ship on the 25th and the shipper has only the 19th and 29th open, he either has to book the customer on the date that he thinks would suit him best, or, if he has time, he writes. By the time the reply is received both dates are booked anyway, so the shipper pulls out another handful of hair and crowds his order in some place.

Another problem will likely come up to give a lot of trouble. When the shipper thinks that he has all orders arranged satisfactorily the weather will suddenly turn cold in the North, at which time letters and wires will start to pour in asking the shipper to delay orders for ten days or two weeks, which of course will mean that the shipper will try to work these in with orders ready to ship at that time. The wise shipper will find it is best to book about seventy-five percent of his estimated capacity to allow for these contingencies.

Filling and Shipping Orders

Then comes the actual getting up of the bees and the shipping. A crew of men, seven or eight to the truck, take a list of orders of various sized packages and numbers, some with clipped queens, some with no queens, and some with extra queens, probab-

ly totalling two to three hundred, load up the empties, feeder cans, queens and crating, and go to the outyards. Each man has his respective job, such as queen finder, shaker, weigher, the putting in of queens and feeders, and carrying packages and crating. Upon arrival at the yard enough empties are unloaded for that particular yard, one or two being distributed to each colony, depending upon the size of package and condition of bees.

The queen finder starts to work and as each queen is found she is put in a temporary cage until that colony is shaken. After the queen finder has a little start the shaker starts in, with the weigher handling the scales and funnel. All the bees are not shaken from a colony, the amount left being gauged by the condition of the colony and the weather, also the time of day. Many yards of bees have been ruined for the season by being pulled on too closely, the following night or two being cold, thus causing a loss of brood which is a serious setback. As the empties are filled, they are carried to the truck and the queens and feeder cans put in, caps nailed on, and special packages being so marked. They are crated in lots of three as far as is possible, thus five packages being one crate of three and one crate of two.

Yards are arranged so that they can be worked in rotation and are pulled every eight or ten days, thus assuring mostly all young bees, which will stand shipment better and are more desirable from the buyer's standpoint. Their normal span of life will be longer, and when one considers that it is possibly twenty-eight to thirty days from the time the package is shaken until any young bees emerge in the colony, he will readily understand how important is this phase of the work.

When the truck comes in with a load of bees, each order of packages is placed in its respective pile, labels, live bee stickers, inspection certificates, and customer's papers are attached. When the express agent attaches the waybills the bees are ready to start on their respective journeys. The shipper's job on that particular order is over unless they arrive at destination in bad shape. Then he has to double up again and squeeze in the replacement as soon as he is notified; so there is little wonder that about May 10th he begins to wonder whether or not he will be able to last another month without being a physical and mental wreck. He swears that he will never again worry about orders if he can just get through this season. The next year he proceeds to do the same thing again, and about March 1st he wonders if he will be able to get enough orders to pay the help, or if it would be better to lay off half of the force, or start price-cutting.

Yes, the package bee shipper has it **very easy**—he spends only fifteen hours a day for three months actually shipping bees and can rest the balance of the year, just getting everything ready for another season. But after he stays with it a few years and builds up a reputation which he thinks is good, he will stick to it as long as bees sting and he is able to puff a smoker.

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A VICTORY apiary owned by I. C. Evans, Decatur, Illinois

(1) Suwannee River

(2) Honeyplants around the eagle's nest.

Honey Plants Along The Suwannee River

By C. H. Huey

When Stephen Foster wrote "Way Down Upon the Suwannee River" with the "bees all around the comb," he little thought of the fame his song would bring, nor the fame the bees themselves would bring to the placid little stream winding its way through the vast Okefenokee—or Okefenoke—as the pioneers say. The historic little Suwannee is rich in verdure and bee lore. Here the Indians once robbed the hollows of the giant cypress trees of the golden nectar . If they saw a bear nosing around a tree or sniffling in the end of a hollow log they drove it away and soon had a feast of honey.

Indeed, the banks of the Suwannee and adjacent territory have pretty much everything to offer the up-and-doing beekeeper. If it is short on the soft willows of the northern clime—as some beekeepers allege—that is made up by maple, furnishing pollen and a little nectar. There is winter huckleberry, snowvine, andrometer. There are the highly-valued tulip poplars. Titi by the thousands puts speed in the springtime progress of the bees. The holly family—white holly especially—abound in profusion, and the honey is of delicious quality. Palmettos add their yield; blackgum has its place; so has water laurel, some coming on simultaneously, others spaced out beautifully during the year. Of course there are acres and acres of the well-known gallberries, which yield among the world's finest honey. Tupelo gum trees have a reputation for themselves and beemen are delighted to find them in their territory—for they are assured of an early flow of choice, delicious, non-granulating honey. So it is of an area of pepper bush—it's something worth counting on. In the mystic shadows clothing the jungles and quagmires with a blanket of foreboding blackness there are scores of minor honey plants generally unnoticed by the beemen—except that the bees are "bringing in nectar from something." For there are so many plants like chokeberry, buttonwood, "soap-stick"—it's hard to distinguish at all times the real honey plants.

Geologists can explain why the Okefenokee became a swamp instead of a pine forest when it was born in the dim, distant past. As the water accumulated, the vegetation became dense; the area appeared as a low place on a flat plain, finally, into terraces. The northeast area is somewhat higher than the southwest. The greater part of the swamp is drained by the Suwannee River, though the St. Mary's lends valuable assistance. Living roots of mass vegetation penetrate deep down into the peat or decayed vegetation known as trembling earth. The cat-

(3) Along the ponds and lakes honey plants abound plentifully.

(4) Cypress and lily pads where the bees drink water.

(5) A walkway into the Swamp.

aclysmic forces of nature did a great job in building the swampland.

In the not too far-away fields surrounding the swamp grows Mexican clover—a bank account for winter stores. With the coming of spring blackberries bloom profusely. Maybe the Psalmist had in mind a swamp when he wrote about a green bay tree by rivers of water—for certainly the bay trees claim their share of attention from the hundred square miles of wonderland, the happy hunting ground of the bees.

Along the dreamy Suwannee the bees were bringing in nectar on Christmas day. The Santa Claus of honey had visited the swamp. And thus it goes. The beekeepers along the line may be surprised with a fine flow of honey when bees elsewhere are not strong; and often the source is a matter of conjecture—to the great wonder of the beeman—for deep in the recesses of the swamp it is very hard to tell just what is yielding, apparently out of season. But myriads of honey plants are there—all along and around the little black stream—where the Suwannee River flows.

In 1928 at Fargo, Ga., a monument was unveiled to the everlasting memory of Stephen C. Foster—but here, near by, is a living monument of bees and honey plants—a land more real, more fascinating, more enchanting than that never-never land where poets live and poppies grow. And a trip along the banks of the Suwannee is more interesting to the lover of bees and nature than the story of Aladdin and the wonderful lamp, or the magic carpet of Bagdad.

Here and there in secluded nooks are apiaries, many of them. It sometimes happens that a bee man sets down an apiary in a few hundred feet of another man's apiary, not discovering the fact until later. He usually moves them, at least the next season. For few people really know their way about the swamp; and many non-bee men have lived in sight of the swamp all their lives and never explored its black, forbidding depths. Here where the Suwannee flows the bees will continue to fly, all around the comb.—

Waycross, Ga.

The Drone in Relation to Bee Breeding

By E. C. Bessonet

[It would appear that one member of the honeybee family, the lowly drone, has received rather scant attention thus far in bee breeding. It is hoped that the following article by E. C. Bessonet, a breeder and shipper of bees and queens, may bring out further discussion along this line.—Ed.]

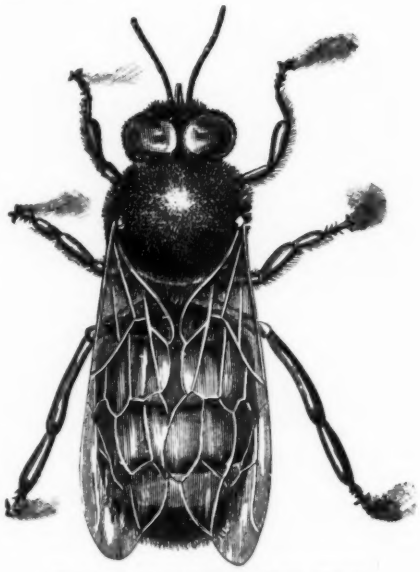
The average beekeeper considers the drone an unwelcome guest in the hive due to his being a heavy consumer of honey. The interest of the beekeeper is confined to restricting the number of drones by providing full sheets of foundation and checking regularly to cull out combs having large areas of drone cells. The bee-breeder places the drone in a different category, in that the presence of a large number of drones of the right type is highly desirable in the promotion of his program of stock improvement.

Analysis of the Drone

In establishing a comprehensive breeding program, it is vitally necessary for the breeder to understand the manner in which the drone fits into the breeding picture before formulating plans which will assure the desired results. Parthenogenesis, which is a term used to indicate that the male is produced from a virgin mother, brings up a problem that is difficult to cope with in this particular work. We know that the queen is able to produce unfertile eggs at will which produce drones only and that a virgin queen is capable of producing drones without mating. In this connection, emphasis must be placed on the relationship of the drone with the worker bees in the same colony.

After a careful analysis, we conclude that the drone is not a full brother of the worker since he has no father and the worker bee has a father. The drone is therefore a half-brother of the worker bee in the same colony. An analysis of this genetical complex leads us to the thought that the worker bee and the drone of the same colony have different genetical qualities.

The drone inherits his characteristics from his mother, while the worker bee inherits her characteristics from both her mother and her father. Obviously the drone also inherits some of his characteristics from his grandparents which would be his grandfather and grandmother



Drone bee enlarged four times.

on his mother's side. Even though the drone has no father he does have at least one maternal grandfather and this grandfather also has a grandfather. All his ancestors contribute to his characteristics.

Since it is impossible for us to ascertain the type of drone that mated with the mother queen, the proper evaluation of the drone is difficult or impossible. In analyzing a colony which is being considered for testing for breeding purposes, we must assume that any good qualities found are not the results of the mating of the queen, except to a limited degree. The breeding background of the queen mother has more influence on the colony than the characteristics inherited by the workers from the mating.

The mating of the queen apparently has no effect on her capacity to produce her quota of eggs provided the fertilization is complete. To further illustrate the point, no matter what type of characteristics the drone possesses, or transmits in the act of mating, no material change is effected in egg laying.

The transmitted characteristics will undoubtedly affect the worker bees and tend to produce workers of

varying qualites according to the characteristics inherited. With this in mind, we go back to the drone and make an attempt to determine what we can expect of him when we consider the colony for breeding purposes. There is little we know of his background except that his mother contributed her share to his genetical makeup. The grandfather on the mother side is unknown, therefore his value can only be measured by the performance of his mother. This is rather a hit-and-miss approach to the proper evaluation, but it is the best we can do under the peculiar circumstances.

If it were possible to ascertain where the good qualities of a colony originated, we could point with a certain degree of accuracy to the characteristics transmitted by the drone and the mother to the worker progeny. The unknown factors involved are disturbing.

There is, however, one promising approach to this situation and that is to continually select over a period of years so that a pedigree can be established which will give us the improvements we desire. The issue must not be underestimated since the drone in the colony contributes nothing to the qualities found in a good productive colony. Our only hope lies in the possibility of his mother transmitting her good qualities to him. I have pointed out that the drone is only half-brother to the worker bee in the same colony and since we have various genetical complications involved, it is no easy matter to determine the true nature of the characteristics inherited by the workers and the drones of the same colony. It is impossible to completely analyze the colony.

In view of the ramifications involved and using the available facts to advantage, we conclude that the drone inherits all his characteristics from his mother and that the sources of these characteristics are in a large measure of a questionable nature. Our only hope is continuous intelligent selection.

Geneticists have found that the queen bee has thirty-two chromosomes while the drone has half that number, or only sixteen. It is the opinion of these men that with only sixteen chromosomes, the drone is capable of transmitting an equal number of characteristics. This means that more genes are carried in each chromosome of the drone, if the interpretation is correct.

The genetics of the honeybee are being investigated by many prominent research men and at some future time we hope to have some material published which will shed some light on the present problems affecting breeding.

Unlike other programs of breeding where matings are controlled, the honeybee offers a most difficult and perplexing problem when the drone is brought into the picture.

It is obvious that in a long-range program designed to effectuate improvements in our present honeybee, we have many obstacles to eliminate, but this can and will be done with persistant effort on the part of those engaged in this work. There is considerable evidence that a continuous selection as outlined will eventually produce results, but the amount of work involved will certainly fail to appeal to the average beekeeper. Many large dairy and poultry men have stepped up production materially in their respective fields by selective breeding and this will be done with the honeybee, but under greater difficulties.

Artificial Mating

Artificial mating has been resorted to for many years, but the results have not been generally published. The Quinn-Laidlaw method of hand insemination dates back into the late 20's and since that time Dr. Lloyd Watson and others have developed and used mechanical means to inseminate queens. At that time great hopes were in prospect with control mating, but evidently little has been accomplished along this line of activity to improve the bee. There is evidence that the present trend is to establish isolated mating stations in areas comparatively free from obnoxious drones.

While this type of program makes it possible to obtain matings with drones provided for this purpose, it is obvious that the genetical background of these drones offers the same difficulties previously outlined.

Condensed Remarks

In summarizing briefly the facts found in the analysis of a colony we find that the drone that mated with the queen transmits some of the characteristics inherited by the worker bee. The worker bee also inherits characteristics from the mother. Drones and workers of the same colony are half-brothers and likewise half-sisters. The combined

(Continued on page 119)

Apples a la Honey

By Mrs. Benj. Nielsen

Honey baked apples

Many homemakers failed to can as much fruit this year as has been the custom in past years; not only because fruits were higher in price than many budgets could afford but because shortage of labor and transportation facilities made them unavailable in sufficient quantities in some localities. In the back of her mind more than one health-minded meal-planner made the mental reservation that she could fall back on the nutrition packed dried fruits. But, alas, only limited quantities of these old standbys have been available and very little variety from which to choose. Still determined to provide this important contribution to the family's well rounded health fare, these cooks have no doubt leaned rather heavily upon the apple—that "fruit of temptation." Not an unhappy choice and, as a rule, available in most all localities. Good for us—why? Yes, indeed, the apple supplies an easily digested form of sugar, valuable minerals, including calcium, phosphorus and iron, three vitamins essential to health and growth and a plentiful amount of roughage. And if you combine it with honey, a natural sweet—carbohydrate in easily digested form for quick energy—you have a team with an A-1 rating for fine flavor, healthful goodness, and adaptability.

Along about this time of year, apples long held in storage are apt to seem quite flat in flavor. The adroit use of honey in cookery combinations can produce real flavor miracles. Whether you like apple sauce or not, try sweetening it with honey; add a few slices of citrus fruit, orange, lemon, or grapefruit, and allow the honey and citrus flavors to permeate the apples before serving; a few cinnamon candies impart a tangy flavor; and a few drops of harmless red food coloring makes a rosy sauce most tempting in appearance.

Today nutritionists emphasize the fact that families may be "food rich and vitamin poor." To be assured of adequate daily vitamin intake we not only must make proper selection of foods but must handle those foods, both in cooking and serving, so that those vitamins all-important to glowing and vigorous health are preserved. So the next time you are preparing apple sauce heed these "don'ts" for proper vitamin conservation: 1. Don't overcook. 2. Don't stir air into foods while cooking. 3. Don't put food through a sieve while still hot. Yes, 'tis easier to be sure of the honey blending while the sauce is hot, however, this difficulty can be overcome and vitamin content preserved if the honey is slightly warmed and then stirred into the cooled, sieved sauce.

In the Nielsen kitchen we prepared our sauce by cutting up the apples (not paring, as a good deal of the mineral content of the apple is near the skin) cooking quickly in very little water—just enough to prevent scorching, allowing them to cook, then running them through a contrivance commonly called a "hired girl" a funnel-like aluminum sieve, supported on three legs. Though why it should be called a "hired girl" I've never been able to figure out—for certainly the user has to furnish all the power that presses the wooden affair which forces the fruit through the tiny holes of the sieve! Then warm honey to sweeten and a few drops of red vegetable coloring if the "sass" seems a bit pale. A health treat deluxe!

Apples baked in their "jacket" skins, their cored centers stuffed with raisins, liberally drizzled with honey, sprinkled with cinnamon and generously dotted with butter, are another means of insuring a mineral and energy rich health dish. Add a bit of water to the pan and bake in

a moderate oven, 350 to 375 degrees F., until the apples are tender.

In case you have not discovered it for yourself, apple sauce makes delightfully moist cakes with grand "fresh-keeping" qualities and so does honey—as you know. In combination, they are a team hard to surpass.

If you are a bit tired of your own particular apple recipes, do try some, or all of these—and may you enjoy these apple-a-la-honey ones as much as we do!

Honey Applicious

One-fourth cup butter, 4 cups diced apples, ⅓ cup honey, ½ teaspoon salt, ¼ teaspoon cinnamon or nutmeg, ½ cup broken nut meats, 2½ cups coarse honey graham cracker crumbs, ¼ cup brown sugar, and ½ cup cream.

Melt the butter in an 8-inch square pan; spread diced apples evenly in bottom. Mix honey, salt, and cinnamon; drizzle over apples. Sprinkle with nut meats. Thoroughly mix crumbs and brown sugar; moisten with cream and spread over mixture in pan. Bake in moderate oven, 375 degrees F., about 35 minutes or until apples are tender. Serve hot or cold with plain or honey sweetened whipped cream.

Honey Cookies Apple Filled

One-half cup butter, ½ cup brown sugar, ½ cup honey, 1 egg, 2 cups sifted enriched flour, ½ teaspoon cinnamon, ¼ teaspoon allspice, ¼ teaspoon nutmeg, and ¼ teaspoon soda.

Cream butter until soft and creamy, add sugar gradually, then the honey, and blend thoroughly. Add slightly beaten egg. Sift dry ingredients together and add to creamed mixture, a little at a time, mixing thoroughly. Form dough into a ball. Chill. When well chilled, roll out to ¼-inch thickness and spread with the following fruit filling, well drained.

Filling

One cup Kellogg's crushed cornflakes, 1 cup apple, peeled and chopped fine, ½ cup raisins and ½ cup nutmeats, ground together, ⅓ cup honey, 1 tablespoon melted butter, ½ teaspoon cinnamon, and ⅛ teaspoon salt.

Combine ingredients and mix well. Spread over dough. Roll up as for jelly roll. Then chill thoroughly to make it easier to handle. Cut in ¼-inch slices. Bake on greased cookie sheet in moderate oven, 350 degrees F., about 25 minutes.

Honey Apple Cobbler

One-half cup cornmeal, 1 cup sifted enriched flour, 2 teaspoons baking powder, 1 teaspoon soda, 1 teaspoon salt, 1½ cups buttermilk, 2 cups apple sauce, unsweetened, ¼ cup honey, and 1 tablespoon powdered sugar.

Mix and sift the dry ingredients together. Stir in buttermilk. Drop batter from spoon or pour onto hot, greased griddle. When cake bubbles turn quickly and brown on other side. This amount will make 12 cakes. Stir honey into apple sauce. When ready to serve place apple sauce between two cakes. Sprinkle top cake lightly with powdered sugar or drizzle with warm honey. Serve hot with top milk or thin cream.

Honey Rice Pudding

Three-fourths cup uncooked rice, 4 tart apples, ½ cup raisins, ⅔ cup honey, ½ teaspoon cinnamon, ¼ teaspoon nutmeg, and the juice of 1 lemon.

Wash rice; pare, core, and quarter apples. (Do pare thinly!) Add apples to rice and cook in 3 cups of boiling, salted water until apples are tender. Add remaining ingredients, pour into double-boiler and cook until rice is tender. Serve with cream or custard sauce.

Honey Apple Pandowdy Mold

Eight cups quartered apples, 2⅔ cups sifted pastry flour, ½ teaspoon salt, 1½ teaspoon baking powder, ½ cup shortening, 1⅓ cups milk, ½ to ⅔ cup honey, 1 tablespoon butter, ½ teaspoon nutmeg, and honey sweetened cream.

Pare apples thinly, core, quarter, then measure. Place in well buttered baking dish. Mix and sift together the flour, salt, and baking powder. Blend in shortening, add milk to make a dough stiff enough to roll. Roll dough out to fit baking dish. Make several slits in center. Place dough over apples, tucking in around edges. Bake in moderate oven, 350 degrees F., until crust is well browned and apples are tender. Remove from oven and allow to cool slightly. Remove crust and cut it into thin slices. Add honey, melted butter, and nutmeg to the apples in the dish. Then arrange alternate layers of apple and crust in a deep dish or mold, pressing layers down carefully. Cover and let stand in

(Continued on page 117)

From the Field of Experience

WAX PRODUCTION

By H. H. Root

The season of 1942 was very disappointing. Letters from many localities indicated that plans for producing wax had been cut short by the failure of the honey crop. In spite of this, however, the contest referred to on page 702 of the November, 1942, Gleanings, brought forth some very practical plans—plans which prove conclusively that if bees are given plenty of space to build combs just prior to swarming time, swarming is controlled and extra wax is secured from the temporary combs built, with no real curtailment of the honey crop. In fact, it is evident that if excessive swarming can be brought under control and the bees kept contented, even more honey may be produced and with less labor.

In the opinion of the judges, the three plans that have been awarded prizes, are much alike in principle, therefore a composite article is here presented, made up of a combination of the three plans with variations suggested by each. It often happens that several producers working on the same problem make much the same suggestions and work out systems quite similar in their applications. Winner's names, page 116.

To Secure Good Brood Combs

To secure good brood combs, use full sheets of comb foundation in nuclei, package bee colonies, or swarms. Drawn combs and sheets of foundation should be alternated, care being used not to provide more room than the bees will cover. Feed must be given liberally if there is no honey flow.

When the bees cannot cover combs enough to fill a hive, use a dummy division-board outside of the outside frame. Spread the frames and add more sheets of foundation as the bees can cover them. Be careful not to spread too much, especially if the nights are cold.

Temporary Comb Building to Prevent Swarming

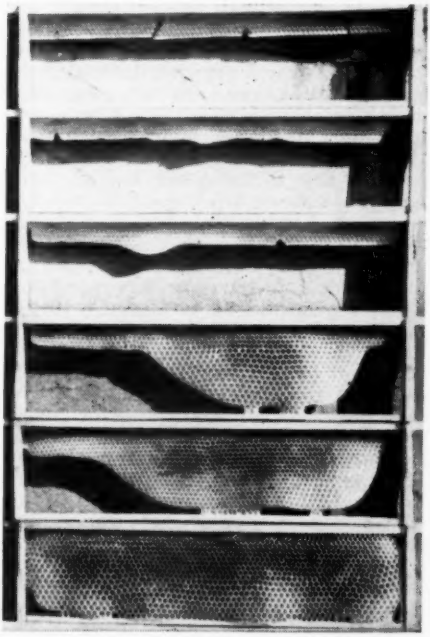
In the spring, queen cells in strong colonies may be started. (Ordinarily this occurs during fruit blossom and dandelion time). Over the single or double brood chamber, as the case may be, place a super in which empty frames are alternated with frames of drawn comb. It is better to have starters in the empty frames, and these may consist of broken pieces of foundation or narrow strips. This top super with drawn combs may contain some combs with a little old honey, if available. When more supers are added at the beginning of the major

Beeswax melted from combs that bees were allowed to build to prevent swarming. This represents extra wax from the honey crop.—Photo by Bro. Pancratius.

honey flow, the queen should be confined to the brood chamber by means of a queen excluder.

The temporary combs built in the empty frames are always straight enough to extract, and if care is used in balancing the extractor, there is no great comb breakage. The temporary combs are usually made up of drone cells from which the honey is always extracted with the least possible effort. The size of the cell means less resistance.

A modification of this plan consists in adding a super containing



THE EVOLUTION OF A SHALLOW COMB
These combs were removed from a colony run principally for wax. Pieces of foundation are used for starters.

frames of starters only. This plan works best if the super is a shallow super; then most of the combs can be extracted without difficulty. Even though no wires are used, there is scarcely any breakage of shallow combs during extracting.

Another modification consists of putting a frame with a comb starter in the center of the brood nest. The comb built is usually drone comb. This may be taken out for melting and a new comb with a starter put in its place a week later. This plan may be kept up as long as the bees will continue to draw out the comb.

The extra wax produced varies from 1½ to 2½ pounds per hive over and above the wax secured from cappings from the regular extracting combs and from any brood combs that may be melted up.

Swarming is kept down. Very little extra work is involved and the production of honey is not curtailed.

If desired, some of the temporary combs of honey thus secured may be sold as bulk comb honey instead of being extracted and melted up for wax.

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BEEKEEPING EQUIPMENT NEEDED IN CANADA

By C. B. Gooderham
Dominion Apiarist

In general with other farm equipment it has been found necessary to place certain limitations on the manufacture of bee supplies. These limitations, however, cannot be termed severe, nor should they have any serious effect on the production of the apiary.

The original Order No. A. 395 limiting bee supplies to 25 per cent of that manufactured in 1940 has been modified so that goods made of wood and "in which no metal is used other than nails for assembling or small reinforcement parts" may now be made up to 150 per cent of 1940, this includes hives, supers, and frames, also wire queen excluders, escape boards, and bee escapes.

Uncapping knives, steam generators and smokers are included in Group 2, and may be made up to 40 per cent of the weight of material used for similar goods in 1940.

Honey extractors, storage tanks, uncapping tanks or melters or any other equipment made largely or wholly of metal remain at the original 25 per cent.

As the order now stands it would appear that little or no difficulty should be experienced in securing the necessary equipment for actual production, but some may arise over that required to handle the crop after it is harvested. Once the bees harvest the crop, however, the ingenious beekeeper may be relied upon to find some means of taking care of it.

The restrictions are not made to embarrass the beekeeper, but are necessary for the purpose of winning the war, an effort requiring the co-operation of every producer.

In the past, apiary equipment has been easy to get at reasonable prices,

Beekeepers have come and gone and there is no doubt that large quantities of supplies are now being held by beekeepers who for one reason or another have curtailed their activities or by those who have ceased to operate. If idle equipment is being held anywhere it is the duty of every person to see that it is released. Advertising in the various bee journals should quickly produce a purchaser. It is true that in peace time when new supplies were plentiful it was inadvisable to purchase second-hand equipment for fear of spreading disease, but under present conditions it may be easier and cheaper to purchase such equipment and to disinfect it than to buy new supplies. This does not apply to second-hand drawn combs, because they cannot be made safe for reuse. Such combs, however, should be melted down for the wax they contain. The latter is now a valuable commodity.

Those who are now keeping bees and require extra equipment should first of all check over that already in stock. A little repair work may put back into production for the duration many an article discarded long ago and thus relieve the pressure on new material. It will be easier and cheaper to repair many articles than it will be to secure new ones.

In so far as the metal equipment is concerned, would it not be possible to co-operate with others, especially in the use of extractors, uncapping knives, and capping melters? While storage tanks are important, no beekeeper will let his crop go to waste for want of them.

Beekeepers, wherever you are, if you know of equipment lying idle, do your best to see that it gets into the hands of someone who may need it. Co-operation is needed.

Ottawa, Canada.

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A LITTLE CHILD SHALL LEAD THEM

By John H. Price

The host of kindly people who, during my 12,000 mile tour of America in 1937, gave me such a friendly welcome, will be interested in the story which follows for personal reasons. Some readers will be surprised at the fact disclosed and probably all will enjoy the humor of the thing.

Twelve months after my return to England I met and married an enthusiastic beekeeper. Eighteen months later this lady entered a nursing home where she produced a son and heir. On my second visit, chatting with the Matron I learned the 24-hour routine. During the day, John, Junior, spent the time with his mother where he was breast-fed but when night came he was taken to the night nursery where the Matron took charge. No food was given during these hours of darkness but if the wee one awakened he was given water made palatable with glucose.

Honey in Place of Glucose

GLUCOSE! The offspring of two beekeepers! What insult! Very tactfully I suggested that I would esteem it a favor if she would use honey which I would supply in place of the glucose. Very hesitatingly the good lady agreed to try the new drink, so the next night's tipple was prepared with Nature's sweetener, The morning report, given with smiles, was that the two babies, John and one other born the same day, had spent a good night and had taken their new drink with gusto. All the day I went about with visions of hundreds of parents taking home babies who had developed a taste for honey. What customers they would be! But next morning I was met at the door of the Home by a nurse who warned me to avoid the Matron at all costs. Apparently after using honey for one night she had decided to return to the customary glucose. During the night Junior awakened for a little refreshment and given the bottle he immediately recognised that the contents was not like that of the previous night. He refused to take it and vociferously expressed his disapproval. Baby No. 2 next awakened and a duet began. The matron knowing that babies must be trained persisted in offering the prepared drink. The songsters ignoring all need for training but knowing what they liked crescendoed their music to the utmost until the matron, beaten at last, got into her dressing gown and going to the kitchen mixed the brew the babies bawled for. Then a great peace fell on the nursing home and nearly all its occupants.

Do babies inherit the likes and dislikes of their parents? Was the boy consciously advertising his parents' wares? And, joking apart, is it not rather unexpected that a baby three-nights old should be able to tell the difference between the sweetness due to glucose and that due to honey?

Maidstone, Kent, England.

HARDY STRAIN OF BEES IMPORTANT IN WINTERING

By E. A. Hogarth

[Mr. Hogarth is one of Ontario's largest and most successful commercial honey producers, with around 1700 colonies.—Editor.]

Having read the views of the various writers in "A Symposium on Methods of Wintering" I am of the opinion that probably the most important factor in wintering has been largely overlooked; namely, a hardy strain of bees.

Bitter experience has taught me that it is next to impossible to winter some strains. Colonies of another strain, in the same apiary, fed and packed in the same way, invariably come through the winter overflowing with bees and with ample stores of honey to last them until the dandelions are in bloom.

For many years we purchased our queens from a well known southern queen breeder. His strain of bees produced excellent crops of honey and wintered well. Eventually the bees we obtained from this source became very cross. Rather than tolerate vicious bees in our apiaries we requeened 350 colonies with queens purchased from two reliable queen breeders.

The colonies headed by the new queens were quite gentle and appeared to be of the same strength as the old strain when packed for winter.

When we unpacked the following spring, the colonies of the old strain were strong and in good condition as usual. Many colonies of both new strains were dead and the survivors were very weak. In fact, they needed help to build up in time for the clover flow. These two strains failed to winter any better the following year and were weeded out of our apiaries.

Following this expensive experience we decided to try out three strains of bees (A, B, and C) that were highly recommended to us as productive, gentle, etc. A and B strains were gentle and compared favorably with our old strain for honey production.

Bees of C strain were only fair producers and quite cross.

The next question was, would they winter successfully?

The following spring we were delighted to find that colonies of A strain wintered even better than any strain tried previously. Many colonies of B strain were queenless in spring, C strain came through in good condition, but were discontinued owing to the bees being very cross.

During 1941 we requeened 740 colonies with queens of A strain; 42 colonies were requeened with B strain; 40 colonies were requeened with another strain, D, and the balance 877 were our old strain which by this time had quite a mixture of new blood.

All queens were introduced and laying by the end of July. Too often when the requeening is left until August, some of the young queens continue laying very late in the season and use up most of the honey in the food chamber. When this occurs it is necessary to feed them at a time when the colony should not be manipulated.

All colonies were in two-story hives and packed in tar paper. The food chambers were full of honey and pollen as well as a considerable amount in the lower brood chamber. A large portion of the stores was aster honey gathered late in September.

The various strains were scattered throughout our apiaries in order to give them a fair trial.

Here are the results:

Strain	No. of colonies	Dead queenless worthless colonies in per cent	Condition of colonies
A	740	1.24	Extra strong
B	42	10	weak
D	40	2.25	medium
Old Strain	877	4	medium to strong

Many queens of B strain were superseded in May and June and colonies were not in condition for the clover. Colonies of B and D strains used considerably more honey than the other strains. Colonies of D strain built up rapidly during the spring and were nearly as strong as A and the old strain at the beginning of the clover flow. Most of the loss in the old strain could have been avoided by requeening. It was the old story of queens that looked good enough for another year failing during the winter.

The bees suffered no ill effects from the aster honey. With strong two-story colonies the quantity of honey is more important than the quality.

These tests show that the winter loss is negligible with a hardy strain.

I am certain that winter losses in the future can be greatly reduced if proper attention is given to the strain of bees.

Tara, Ontario.

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DON'T REMOVE STEPLADDERS ON FLOOR BOARD OF HIVE

By S. H. Burton

In your enthusiasm to save beeswax do not remove the little mounds of wax built by the bees on the floor boards for their "stepladders" to reach the bottom-bars of the brood frames on their way up to the brood and storage combs. In new floor boards we help them in this matter by nailing a ¼-inch square stick 5 inches long diagonally across the center of the floor board for something to climb on. It takes a lot of time and effort for a tired field bee coming in to have to climb up a side or end wall and then back over the frames and I think they are pretty smart in building these stepladders. I have counted as high as thirty of them on a single floor board.

Washington, Ind.

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OUTDOOR-WINTERED COLONIES STRONGER IN SPRING THAN CELLAR-WINTERED COLONIES

In the February, 1942, Bee World, page 13, there is an account of some work done at the Experiment Farm at Brandon, Manitoba, Canada.

It is here presented:

In Volume 22, No. 11, page 86 of the Bee World for November 1941, Mr. John Spiller makes the following notation: "In some countries where the winters are severe, such as Canada, it is known that bees kept in hives out in the open, although given heavy external packing, require five times more food than the hives stored away in cellars." The impression held by Mr. Spiller is not uncommon and there are a large number of Canadian and American beekeepers who have had very little experience with wintering bees who frequently propound the same statement, consequently we have prepared a table showing comparative results of cellar-wintered colonies for the six-year period 1934-35 to 1939-40 inclusive and for the outside-wintered bee for a six-year period. To make the comparison more equitable or for the same period of time we have prepared the six-year average for both groups. The table below is self explanatory but we would like to draw attention to the fact that the outside wintered colonies are much stronger in average strength at the first examination in the spring than the cellar-wintered colonies. The cellar-wintered colonies decrease in total number of bees for about three weeks after their first examination whereas outside-wintered colonies tend to increase in population strength.—Ed. Braun, Assistant to Superintendent, Apiculture.

Note particularly this, that the outside-wintered colonies are much stronger at the first examination in the spring than the cellar-wintered colonies, also that the cellar-wintered bees consumed more stores than the outside-wintered bees. Refering to experiments conducted at Medina some years ago, cellar-wintered colonies lost between 10 and 12 pounds during five months in the cellar. Colonies in single-story hives wintered out of doors lost from 15 to 20 pounds during five months. The bees at Brandon may have been in the cellar a longer time and may have been of different strength than our colonies.

STORES CONSUMED BY CELLAR-WINTERED COLONIES.

Year	Number of Colonies	Average Total Consumption lbs.	Number of Colonies Alive in Spring	Average Spring Strength of Colonies: Bees	Brood	Eggs
1934-35	47	38.27	44	6½	1/5	2
1935-36	63	36.11	60	7	½	1
1936-37	56	48.04	55	8	2	2
1937-38	54	46.60	51	7½	0	1½
1938-39	41	39.52	40	7	1/6	1
1939-40	31	36.46	26	6½	0	1
Six Year Per Colony Average	48	41.20	46	7¼	½	1½

STORES CONSUMED BY OUTSIDE-WINTERED COLONIES IN BALSAM-WOOL PACKS.

Year	Number of Colonies	Average Total Consumption lbs.	Number of Colonies Alive in Spring	Average Spring Strength of Colonies: Bees	Brood	Eggs
1934-35	15	45.03	15	9¾	2	3
1935-36	15	43.76	15	9	3	2
1936-37	15	51.25	15	12	1½	2
1937-38	15	39.40	15	10	3	2
1938-39	15	38.10	14	9½	1	2
1939-40	15	24.30	13	6½	1/2	1½
Six Year Per Colony Average	15	40.13	14½	9½	2	2

Experimental Farm,
Brandon, Manitoba, Canada.
December 2nd, 1941.

FEBRUARY—A MONTH FOR ODD JOBS

By Edward T. Wirth

February brings longer days, more sunlight, and an itch to propolize the fingers. Beekeepers in the North begin to wonder what is going on in the hive, even though the snow is deep and the thermometer flirting with zero.

Ordinarily there is nothing for the northern beekeeper to do. But still there is one thing that can be done. You can do the things that are necessary but dull routine. You can start on some of the things that you have been putting off since last summer, and which next summer you will wish that you had done.

Scrape clean the inside of your super bodies, particularly where the frames rest. It makes a whale of a difference in handling when the end bars are clean. Sure, the bees will smear them up again, but that will be on top of anything you leave now.

And if you are troubled with brace or burr comb, remember that the bees will continue anything that has been started. Scrape off any little accumulation of wax on the tops or sides of your frames. If you don't, the bees will start right in again and build right up in the same places.

February is a fine time to do it. The combs are cold, and very, very brittle. A good scraper will clean off the mess a lot easier now than later when the wax has a softer temper. This goes for propolis too, but if you don't want to break a lot of nice combs, remember that you are handling something a lot more fragile than an eggshell.

As your equipment gets older, it begins to show signs of its age. Cracked hive bodies can be fastened together with dowel pins or nails if you can get them. If a body is cracked in such a place that it can't be repaired in that way, try tacking a little piece of metal across the crack to tie it together.

Bodies can be painted or freshened up. There is nothing nicer than a lot of gleaming white supers in your yard next summer. It gives you a little more self respect, and people will think more of your product if the yard itself is an example of how you handle your honey.

Your plans can be made now as to the size of your undertaking. Conditions will vary. Some of you might have to cut down because of a lack of help. Others can handle more than they have in the past. Try to gather up extra equipment so that it can be put to good use during the next honey flow.

Get done with that dirty job of trying out your old combs and scrapings. Remember that wax is an important war material, and it is scarce.

Above all, send in your bit to the American Honey Institute, if you haven't done that yet. Don't let the war news make you forget that they are responsible for most of the honey propaganda that you see, read, and hear.

Brooklyn, N. Y.

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SECOND GLANCES

By C. M. Isaacson

That is surely a peaceful appearing scene on the cover of 1943's first Gleanings. When one looks at an apiary at such a time, it is hard to realize that Life—present and future—can be below the cold and quiet exterior.

Dr. Eckert's plan for producing honey in shallow frames should be of considerable help to those who wish to begin beekeeping in these times of scarcity of equipment. It is both practical and profitable. Attention should be given to his caution against allowing melted wax to remain in contact with the honey during any long period of the separation process. That method for making a separating can is simple and inexpensive—an important thing for beginners.

That propolis is injurious to beeswax has been known for some time, but the bulletin quoted from in this article (page 11) gives definite scientific evidence in a clear manner. That all virgin wax is similar in physical characteristics is interesting in view of the different colored wax produced during various honey flows (a distinct yellow from goldenrod, etc.). The explanation that this color often comes from admixture of pollen is logical.

Mr. Mraz, or should I say, his helpers, seems to have solved the labor problem for his own apiaries (page 14)—if everyone could be as fortunate as regards the quality of help, the solution would be simple. His record of wintering is very good, and his metal cases certainly must make for speed in packing, as he says. But the mere thought of a metal case up here in Northern Minnesota makes

me feel cold, even tho I know the feeling is foolish.

Perhaps we will at last have some order out of the honey price situation (page 16). The past few months have been hard on everyone concerned—from producer to consumer. The plan of the new order seems fair, and if efficiently administered, should help a great deal.

That excluder pictured on page 17 shows a typical fall scene. I have sometimes seen nearly the whole excluder clogged with drones (in my own apiary, I am ashamed to say).

Mr. Dunham itemizes in a concise form the benefits to clover seed production from the pollination activities of the honeybee. I wonder just how many stop to realize the work behind those figures that he gives so easily? They represent a big and valuable job.

I think that other beekeepers must have noticed the bee (neither queen nor worker, but in between) mentioned by T. W. Millen in his article (page 19). Unusual difficulty in requeening has caused me to discover such a bee more than once— a laying worker colony is easier to requeen. And anent his mention of the speed with which Apis Indica acquires laying workers, is this not a characteristic of most eastern honeybee races?

That beekeeping is a "disease" and can be contracted in many ways is well shown by John Seemiller's article (page 22). One might think that interest would have died with the winter demise of his "squirrel box swarm", but far from it! The inoculation was firm, and a new beekeeper was in being.

That the work of the U. S. Bee culture Laboratories is large and varied is shown in the report (page 24). Again the fact of no physiological immunity to AFB is emphasized—that behavior characteristics alone determine the degree of resistancy. Just as a thought, will these characteristics remain constant in different localities or under different conditions?

The value of the work towards breeding a distinctive, easily recognized strain of bees is certainly plain, as is that of testing out the performance of various stock—and if the work towards artificial insemination of queens can be fully developed, the whole problem of producing a more desirable bee should be simplified. And that sugars in nectar will invert without action on the part of the bees is certainly of interest. As to all this work, we should remember that while we as "lay beekeepers" cannot always see the immediate value of every item, when correlated with other facts, they may be of considerable and practical value.

Mel Pritchard. I never met him, but somehow I seemed to know him thru accounts of his work, and the items of almost personal interest that he had in Gleanings from time to time. I think all of Gleanings' readers will miss him.

That item on "making the old smoker do" may help out many a beekeeper nowadays (page 31). We can't simply order a new smoker and expect to receive it always promptly these days.

Read that editorial on page 33 over again—and thoughtfully. There **are** better days ahead. There **will** come a day when real Christianity will be tried.

Start the New Year right by sending your contribution to the American Honey Institute. Remember the work it does is for the years, not for a day, and it must be supported likewise.

Middle River, Minnesota.

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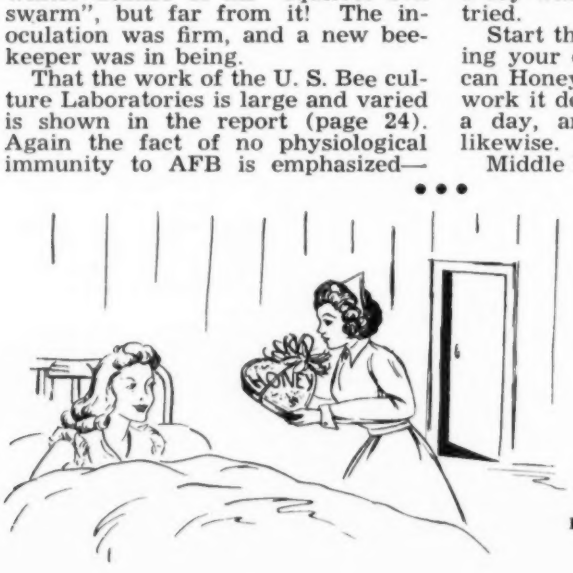


Drawing by Miss Hope Sawyer, Ithaca, N. Y.

Spinster Jane Says

Br-r-r! What cold weather we have had! It started to rain the very next night after Christmas, thought better of it, turned cold again, and brought a regular blizzard. For a week or more the thermometer has hovered from 30 to 40 degrees below every night. We know because we hung the thermometer on the outside of the northeast window, where it can be easily read from inside. It has been a little too cold for comfort, and especially too cold for the men who have to keep three stoves in fuel.

We, even as far north as Sudbury District, can better understand Russia's hardships, than can southerners in their warm climate. But cold countries breed a hardier race than do equatorial countries, and tempers are apt to be a bit less fiery too.

An experiment we have never yet been able to make, because we could not procure northern-bred bees, is to determine if the northern-bred variety is hardier than the bees brought from the South. So far, all our package bees have come from the South. They get here when the weather is warm, become acclimatized, and thrive with us. Landing here from states where the honey plants are so different, they seem to know from instinct, keen sense of smell, or by some strange intuition, just where to go and what to do. They are much wiser than we human beings would be if dumped unceremoniously in a strange land.

War, especially submarine warfare, has brought about sugar shortage and consequent rationing. It has done more to advertise honey and make it more popular and widely used, in a short time, than beekeepers have been able to do in years of trying. Our market has been made for us. Now, can we keep it? We can if we put good honey on the market and back it up by our honest word.

In our home there are only three this winter, consequently we have six pounds of sugar to last us four weeks. We sometimes run short and do without, but we do not grumble. We are just more careful next time. Once when we had been sugarless for a few days, we chanced to tell the merchant where we traded. Said he, "Why should you mind being out of sugar, and you with bees! Why, I'll trade my share of sugar for honey any day."

Our honey is getting low, too, but can you wonder! We have had it on our table twice a day at least ever since we took off the first of it.

We think the constant use of it builds up resistance to colds. We do have an occasional cold, but when we do it is through exposure and our own carelessness. We have one cold to our neighbor's half dozen, and we thank honey for it.

A certain woman doctor, a cousin of mine, living in Illinois, read some bee articles, and sent me this true story:

When a little girl about four or five years old, she was at my father's home one day when a swarm of bees was coming off. She stood in the yard watching, all wonder and awe, but quite unafraid when a bee alighted on her lip. Quick as a flash her small hand smacked it and it stung her. When she took her hand away there was a dead bee! Hurt, dreadfully, and with the tears coming, she was hurt much worse when my father shook her exclaiming, "She has killed my queen!" No wonder she remembers it so well. And could it really have been a queen?

All summer long I acted as a sort of home guard over the bee yard. It was my job to feed the bees, to watch for swarms and report them. Boy's brother did the hiving trick, rarely getting stung. There were feeders on all hives just in case they might be needed. Those in good shape had stones on the covers. These served a double purpose. They marked hives as "plenty of stores" and they kept the covers secure. In gale-like winds, covers have often been blown off, and this means chilled brood—a bad set-back to any colony.

Though these marked hives were not fed every night as the others were, Boy told me to watch out that the bees were not carrying out dead brood. I watched closely, and they are surely workers. Given dirty combs to clean up, it was just no time at all until all debris was piled outside the entrance. They are fine at house-cleaning, just as humans are.

And may 1943 prove the best year yet for the honey and wax producers of both the United States and Canada.—Spinster Jane.

EMPIRE STATE ASSOCIATION MEETS

By William L. Coggshall

The Annual Winter Meeting of the Empire State Honey Producers' Association was held in the Onondaga Hotel at Syracuse on December 10 and 11. A total of about 70 beekeepers attended which was considered good in view of present travel conditions.

The entire program was devoted to beekeeping subjects having a direct bearing on the war effort. This theme was reflected particularly in the discussions of economical central plant arrangement and operations, and the forum on colony and apiary management. Speakers on marketing stressed planning now for the post war period.

"Tim" Dyce led a discussion of central extracting plants by questioning four commercial beekeepers seated at the speakers' table. Each beekeeper followed an outline prepared in advance and supplied in mimeographed form to each member of the audience, and under each point of the outline described his own practice. That this was a successful method of presenting practical information was evidenced by the keen interest shown by the audience and the questions and information volunteered as each point was taken up. Points covered included—plan of construction, heating and power equipment, methods of handling supers off and on trucks, storing combs in a hot room before extracting, extracting methods, and straining.

A. C. Gould, New York Chief Apiary Inspector, led a similar discussion on management looking to a reduction of labor and transportation without undue lowering of production per colony. Points discussed included planning out-apiaries, preparing and packing colonies for winter, spring management, and swarm control.

An entire morning session was devoted to each of these discussions and it is hoped this type of meeting will be continued in the future. Dyce and Gould really kept things moving.

The afternoon of the first day was devoted entirely to marketing and all the talks stressed doing our best to help win the war and at the same time plan for the future. It was pointed out that now beekeepers have the opportunity to own their own marketing agencies and if they do not achieve supervision over marketing before the war ends another opportunity to do so may never occur.

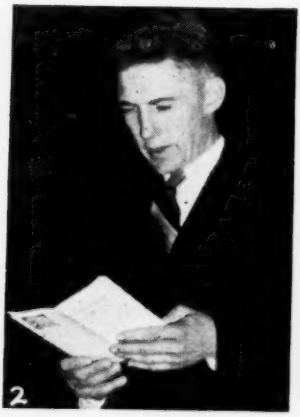
A. C. Gould explained the effect of the war on New York's inspection program and indicated he would be satisfied if American foulbrood could be held in check for the duration without any further gain in eradication. New York's percentage of disease is well below one percent and it would be a shame to lose progress now. Inspectors may be difficult to find in 1943 and beekeepers can help by doing as much of their own inspection as possible instead of relying on the inspectors as in the past. Considerable discussion took place over the danger of purchasing used equipment.

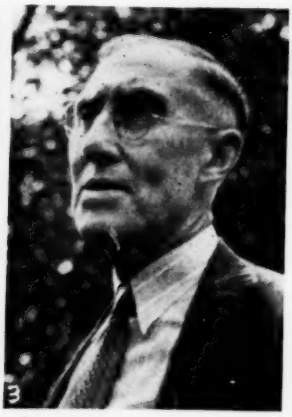
Progress of the Finger Lakes Honey Producers' Cooperative was reported and it was brought out that this organization has been handling at least 10% of the New York crop the past two years and with its present membership, which is growing, members may have 20% of '43 honey.

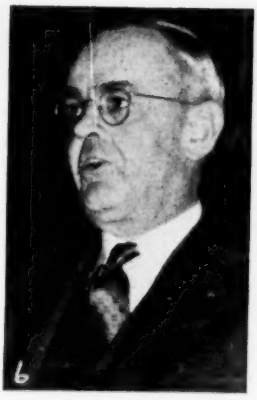
An entire afternoon was spent in a discussion of the various Government regulations affecting beekeepers, especially the new O.P.A. ceiling effective December 3rd. Dr. E. F. Phillips explained the requirements and when points were raised concerning any phase of the order, an official of O.P.A. was present to give his interpretation of it. Producer-packers are apparently confused in some instances and are awaiting clarification from Washington on some of the items covered.

It was brought out again and again throughout the meeting that the beekeepers of the country are not organized and as a result, there are many conflicting demands sent to Washington with consequent confusion there as to just what beekeepers actually do want. If properly organized the supply manufacturers, packers, package bee men, and other allied industries, would not have to fight alone for their interests—they would be getting help from the ones who could really ask for and get what was needed. It was felt and a resolution was passed to make a start in the right direction. A pro-

Some Leaders at the Meeting of the Empire State Association on December 10 and 11







1. Burel Lane, Commercial Beekeeper and President of the Association, introduces a speaker.
2. Harold Merrell, who operates 1200 colonies, reads the report of the Resolutions Committee.
3. Walter Severson, genial Manager of the G. B. Lewis Branch at Albany, advised beekeepers to take good care of their present equipment.
4. Ivan Bierley of the New York State College of Agriculture who discussed the economic situation in relation to honey.
5. C. W. Sadd of the Cooperative G.L.F. (Grange League Federation) uses diagrams to illustrate how farm products reach the consumer through the various channels of trade, and discussed the present and future parts producers' and consumers' Cooperatives may play therein.
6. Ed Cary, the Association's hard working Secretary, discusses the effect of war on the bee supply business. Ed manages the A. I. Root Company of Syracuse.

ducer and a packer (or more than one of each) should be selected from each state by the beekeepers of the state, to represent it and with the necessary authority to speak for the whole state. Get these representatives from the various states together and have them appoint a committee to speak for the whole country and let this committee present the views on any problem to the proper people in Washington. Only in this way can real results be attained, and immediate steps are being taken in New York to start the ball rolling.

At the business meeting of the Association the following officers were elected: President, Burel Lane; 1st Vice-President, George Rasmussen; 2nd Vice-President, John Rulison; 3rd Vice-President, Howard Grimble; Sec'y.-Treasurer, Ed. Cary; Field Secretary, Tim Dyce.

From North, East, West and South

SOUTHERN CALIFORNIA, Jan. 3

Weather: December continued dry with nights a little cooler, then with Christmas came a nice rain over Southern California. To say it made the farmer smile is putting it mildly. Even the beekeeper had a grin all over his face. Thursday it sprinkled a little and we had considerable wind. Then in the night, just to remind some of the Easterners of home, it gave us as a sample, a few of the loudest claps of thunder we ever heard in Southern California, and with it came the rain. Then on Christmas morning, when many people had saved their four gallons of gas and were all prepared to visit friends or relatives for Christmas dinner, the sun came out bright and clear with here and there a few fleecy clouds drifting across the sky making it a perfect day.

This rain while not enough to get excited about is a start and will give new life to all growing things. Even before the rain, by observing closely, one could discover many new shoots just starting on the sages and other shrubs, showing that there was still some moisture in the plants and ground from previous years.

Crop: The honey crop, as we all know, has been in the cans for some months. The market is very active so far as demand from buyers is concerned. They all offer the same price, 12c for white or 11½c with cans returned; still they ask, "What are you asking for your honey?" Most of the inquiries are from Southern California men who pack and distribute in small containers and find the demand such that they are going to need more honey than they had anticipated. This is a good sign for the future even if we cannot supply their needs at this time.

Beeswax is in demand at ceiling prices.

Miscellaneous: December winds up one of the driest summers and falls within our memory. But as usual we are still hoping for plenty of rain. When our friends have asked us, "How is the honey business?" we have answered, "The poorest crop and the best price in ten years". A few favored localities have fared better than others but, generally speaking, we feel that this answer pretty well covers the season's work over the greater part of South California. Fortunately most beekeepers are taking good care of all equipment and while many colonies are light in stores and there will be a considerable loss, still, as that sage of beekeeping, Adam Grimm, is quoted as saying, "I will take good care of empty hives and equipment and you see how quick I fill all those hives with bees next spring". Remember, fellows, that saying holds good today as well as it did 50 years ago.

Well, the device spoken of before in our previous letter is working and the owner drives into his apiary in the evening, loads 100 or more colonies on his truck, some weighing over 100 pounds, drives to the new location and unloads all by himself. Oh! the back aches it saves as well as man power.

The annual meeting of the California State Beekeepers' Association held in Pomona December 5th proved a great success. Over 100 beekeepers and their wives were present. There were suggested changes in the Apiary Inspection law. This subject was discussed at some length and a committee appointed to go into the matter, make suggested changes, and submit to the membership for their acceptance or rejection.—L. L. Andrews, Corona, Calif.

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NORTHERN CALIFORNIA, Jan. 5

Bees and Honey: Conditions in the Bay Region are different from any other part of the state on this date. The eucalyptus honey flow is on. For this reason we will confine this article closely to the eucalyptus honey crop in the Bay Region. The weather is ideal. We have had plenty of rain. We have had few rainy days, the rain falling at night, clearing in the morning, with the balance of the day clear and warm, at least warm enough for bees to get very busy. If they can

work two hours a day they will bring in more honey than they can use. Pollen is plentiful, the result being a rapid growth of colonies. Our bees will be swarming in March. From now on bees increase rapidly and every day shows an increase of flowers on the eucalyptus so the up-to-date beekeeper should have a crop of 100 to 150 pounds to the colony by the end of the season which comes in May.

At this time our beekeepers divide themselves into two classes,—the stay-at-home and the migratory. If the stay-at-home extracts too closely he may lose a lot of his bees by starvation before another crop rolls around. The migratory beekeeper is fortunate if he has a good location in the alfalfa or beans to move into. He has lots of bees and other conditions being right he will get another good crop. Then cutting his crop a little short he can extract and move to a good location in the star thistle and get a good crop there. This is for the live beekeeper only.

Miscellaneous: A few years ago at one of our meetings when a beekeeper from our locality attempted to speak in favor of our honey he was lucky not to be laughed at from the platform. Today in many homes we find honey taking the place of sugar and it is eucalyptus honey. Eucalyptus honey is preferred by many to what we have been calling our best honey. This speaks well of our best honey. It means a market for honey. We are receiving letters every day from our boys in the Army asking what is the matter with the beekeepers? "I have not seen any honey since I have been in the Army."

In looking back over this article we notice that we have said nothing in favor of bees for what they do for us in the way of pollinizing our crops. We are told that the University of California, after a three-year study of this subject, announced that they found that bees were worth more for pollination than they were worth for the honey they produce. Now if half of what we have said is true is it not reasonable to say beekeeping is in its infancy? And if we conclude that beekeeping is in its infancy is it not time for the industry to grow up? Should we not pay more attention to organization—a better state organization, better county organizations affiliated with our state association, and more carefully read bee journals and other bee literature? There should be more banding together to help each other. Today where there is a neighbor beekeeper going to war we can offer to care for his bees while he is gone and return them when he comes back. There is a chance for improvement all along the line. Let's get busy and do it.—Cary W. Hartman, Oakland, Calif.

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TEXAS, January 1.

Weather: December was an ideal Texas winter month, the temperature being sufficiently low to keep the bees at home but to allow them a short period of flight on almost every day. The majority of the days were clear and bright. Desert plants and late composites gave the bees something to work on. Whether they were securing anything other than pollen it is difficult to say. The first cold weather came on December 29 when the thermometer reached 27 above.

Conditions: All beekeepers reporting consider their bees to be in excellent condition. Numerous reports of plans for increased number of colonies and occupation of hitherto unoccupied bee territory are common. All beekeepers seem agreed that the task of the spring of 1943, no matter what may happen, will be a full-time job for the beekeepers as each one is planning to produce a greater amount than has been produced for a number of years.

Only a few of the migratory beekeepers made the southward trip this year. Some of those commonly wintering in Texas are out of the business and others have taken the chance of wintering in the North. We have just heard of one beekeeper who is wintering in Arizona.

Prospects: The buyers of honey for large packers are already prospecting for spring business and it is probable that a certain per cent of the spring crop will be sold before it is gathered. This seems to be a long bet but buyers generally know considerable as to the trend of the markets. Beekeepers, as a rule, learn to act at a second's notice, and are able to stand anything and to work through long periods of time knowing that work must be done when it is needed or it will never be needed.

Miscellaneous: Texas has furnished the Army a goodly proportion of its young beekeepers and also some of

its older ones. Knowing these men and their ability to do the unexpected it can be predicted that Texas beekeepers in the Armed Forces will rank high among those who are now on the firing line.—H. B. Parks, San Antonio, Texas.

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UTAH, January 4

Weather: After nearly a two-month period of cold which prevented any bee flights, the weather finally broke during the holidays and permitted excellent cleansing flights. On the last day of 1942 the weather in Salt Lake City was so warm that I noticed some bees from a nearby apiary scouting around my honey house. Robbing at Christmas time is a rare occurance in Utah.

Up to the first of the year our hopes for a good blanket of snow to help protect the hives have gone unrealized. This is going to increase winter losses, as less than half of the beemen here use winter packing.

Crop: As nearly as we can ascertain, Utah beekeepers, with their 48,000 hives, produced approximately 3,000,000 pounds of honey in 1942. The average per colony production was about 61 pounds, and most of the honey ran white and water white with an excellent flavor and a heavy body. The Uintah Basin of eastern Utah and the Cache Valley area in the North gave the heaviest crops. Most of the crop was sold before the year ended. Those who have been losing money or merely breaking even for the past six or seven years previous to 1942, have again decided that honey production is about the best agricultural game there is.

Miscellaneous: The Delta men are beginning to move back to California in preparation for the orange flow. The year 1942 served them poorly both in the orange groves of southern California and in the alfalfa seed fields of Utah, but they are optimistic for a better deal in 1943.

Disease: About 2.4% of the colonies broke down with A. F.B. during the year. Our worst disease areas are those in which habitually careless methods of treatment have prevailed. We inspectors have decided, and the best beemen agree, that the the only way to eliminate disease in Utah is to gas the infected colonies the day they are discovered and to haul them out of the yard for immediate burning. This policy has been carried out in 1942. We have permitted sterilization of frames and wax salvage only in approved bee-tight plants and we have discouraged shaking entirely. It is only the exceptional beekeeper who can treat disease or sterilize equipment without infecting healthy hives in the process. It seems wasteful to burn brood and extracting combs at a time when wax is in such urgent demand for war needs, but when we consider that one infected or badly doctored hive of A. F. B. can throw a whole apiary out of both wax and honey production, the burning policy looks good.—William Moran, Utah State Bee Inspector, Salt Lake City, Utah.

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BRITISH COLUMBIA, January 1

Weather: As this is being written on New Year's Day bees seem to be comfortable under a blanket of a foot of snow with moderate temperatures of only a few degrees of frost. Weather during October and most of November was ideal for feeding and packing of colonies and our own packing was not finally completed until Nov. 14th. The only complaint this fall has been that temperatures allowed little opportunity for bee flight and many of our own colonies became restless and were clustering on the outside of winter cases as late as Dec. 15th when colder weather drove them inside. In our experience such colonies do not winter well unless the opportunity for a flight occurs very speedily. This condition occurs with us almost every fall and we can only guess that it is caused by a preponderance of late hatched bees which have not been able to fly owing to cool weather.

Market: Local honey supplies have been cleaned up and customers are inquiring as to just what happened to all the honey. The demand was so great as to be embarrassing and it was difficult to distribute the honey equally even though we ourselves secured a better than average crop. We are living in a small town of about 5,000 population but our own local sales for the first twelve weeks of the season amounted to 22,000 pounds in addition to sales by other local beemen.

A shipment of 25 cases of chunk honey in 16-ounce jars consigned to one of the larger stores in Vancouver

almost started a riot when put on display and was sold out in exactly two and a half hours.

There will be a market for all we can produce in 1943 but the limiting factor with some of us is going to be the question of sufficient help to use our present equipment to advantage without considering expansion at all but many inquiries are being received from beginners and old-timers alike as to the possibilities of the situation, and will mean a greater demand for package bees next spring.

We understand that brokers have been active in trying to sell Mexican honey but that at least two carloads of this were turned back at the border on account of too high a moisture content.

There is apparently a misunderstanding of the price regulations and some dealers are makng a standard of the highest price at which honey can be sold instead of basing selling prices on actual cost to the dealer as outlined in order No. 182.

May we conclude with a New Year's wish as received from a beekeeper friend now with the armed forces:

"May 1943 be a year of much honey and peace."—G. F. Pearcey, Kelowna, B. C.

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SASKATCHEWAN, Jan. 7

Weather: The cool weather of the summer continued into the fall and bees did not have the opportunity of producing the bumper crop which the large acreage of flora available to them would have enabled them to produce in a year of higher temperatures. However, in spite of cool weather, Saskatchewan bees produced the largest crop of honey ever harvested in the province to date. This was due to the fact that there has been a heavy increase in the number of colonies during the past three years. The cool weather of the fall continued into winter and temperatures ranging from 30 to 40° below have been common during December and early January.

Good moisture conditions prevailed over most of the province during the fall and clover went into winter in good condition and has had a good protective covering of snow during this cold weather. All reports received to date indicate that bees seem to be wintering normally and the fact that the cold weather has been continuous leads us to expect a less than normal winter loss this year.

Markets: The greatly increased demand for honey this year, together with the small crop of honey harvested across Canada, is responsible for the fact that the markets have been short of honey all fall and practically the entire crop has been marketed by now, with the result that very little honey will be offered for sale between now and next fall. It is most unfortunate that beekeepers do not have sufficient supplies to take advantage of the tremendous demand which has developed as a result of sugar rationing and the shortage of jams and syrups.

Miscellaneous: The Canadian Beekeepers' Council just completed its third year of operation with the annual meeting of the Council in Ottawa called early in December. The Council is an organization of beekeepers, formed to deal with all national beekeeping problems and through its efforts a great deal of benefit to the industry has been done, particularly during the last two years.

The membership of the Council is made up of two representatives from each province. These representatives are appointed by the provincial beekeepers' associations. If a province has a provincial honey producers co-operative association, in addition to the beekeepers' association, then each association elects only one delegate so that the maximum number of delegates from one province to the Council is two. The six main honey producing provinces in Canada have memberships in the Council. These include British Columbia, Alberta, Sasketchewan, Manitoba, Ontario, and Quebec. The remaining three Maritime provinces are not commercial honey producing areas and have not, to date, become members of the Council. However, as 95% of the Canadian beekeepers are represented in the other six provinces the Council can justly claim to be representative of the beekeepers of Canada.

A Council of this nature can be of inestimable value to beekeepers, giving them a centralized organization through which they can effectively express themselves on matters which affect their interests.—R. M. Pugh, Provincial Apiarist, Fort Qu'Appelle, Sask.

INDIANA, Jan. 7

Weather: During the first three weeks of December several inches of snow covered the unfrozen ground while temperatures frequently dipped below the zero mark. Then, following Christmas Day, came two inches of rainfall and many cloudy days and nights, all of which augur well for the spring growth of clover and other nectar-bearing plants, brightening the outlook for the optimistic beekeeper. But, as chickens are not to be counted before hatching, so the beekeeper may not count his honey before it is in the cans.

Price Regulation: Some beekeepers here are having difficulty in comprehending OPA Price Regulation No. 275 and hence inadvertently may be violating the law. The 12-cent ceiling on bulk honey is not hard to understand, but how about the beekeeper who peddles his honey or sells a dozen pails to his grocer? As I interpret it, the ceiling is determined simply by adding to his 1941 September, October, November average price, 6.2 cents, which is the difference between 11.8 cents and 5.6 cents, the producer's "weighted average cost" per lb. To this may be added transportation allowance when shipped. Thus, if he sold 5-lb. pails to his grocer at 50 cents in '41 his ceiling or maximum price would now be 81 cents; or if he retailed at 65 cents, the ceiling price would now be 96 cents (neglecting freight and the 102% allowed). Apparently the price cutter of '41 is now out of luck if he abides by the regulation, or worse still, perhaps, if he doesn't. Anyway, all this figuring is easy compared with the dozens or hundreds of pages of questionnaires and reports required of the small manufacturer of war supplies, as I happen to know, not to mention priorities.

Miscellaneous: Well, here is January 7 and more zero weather, followed by a big snowstorm and we are wondering how the bees are faring, especially those in hives without overcoats. Anyhow, with top and bottom ventilation they are keeping dry, which is something. We are wondering, too, about next year's supplies.

Some of us are fortunate in having on hand a fair amount of used equipment with perhaps some to spare. There is not much honey left to sell in this locality. Perhaps by the time the new crop arrives there'll be more figuring to do in determining prices. —E. S. Miller, Valparaiso, Indiana.

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ILLINOIS, Jan. 8

Weather: The weather for December was the coldest on record for many years. During most of the severe cold weather the ground was well covered with snow. The last week of the month the ground was bare of snow and the clover plants looked very good. We did not get the heavy rains that some parts of the country received. Most all our moisture has been from snow. Today the ground has another six-inch covering and more snow in prospect. It is to be hoped our plants are protected and a good crop materializes next season. All our apiaries were packed during the fine weather in early November. We finished all packing on November 10th. One of our apiaries was on a farm where a new tenant house had to be built. The only desirable place left was where the apiary was located. The colonies were unpacked, moved 15 miles to add to another apiary, and repacked. The moving was done at odd times between rains. We finished at 3 p. m. on November 28th, the last ten minutes in a heavy snow fall.

Conditions and Prospects: Beekeepers should show a profit next season from a good honey crop. They deserve an extra profit from the very small one taken last season. Our own crop was the smallest ever taken; in fact, it wasn't even a crop. We have recorded it as a total failure. From over 300 colonies our sale of honey was $150.00. Of this amount about $50.00 was from comb. The remainder was from honey removed from imperfect combs to be rendered for beeswax. Our wax saving will show a better figure. From bits of wax saved here and there from imperfect combs and such, we have shipped 468 lbs. of wax. An additional 75 lbs. or more is yet to be salvaged from old combs. Comb producers have so very little wax to exchange, the amount collected this year seemed enormous for us. We expect quite a winter loss in this area of the state or any other

area with similar conditions. We know from conditions found in some of our apiaries where they did not get a fall flow, what to expect in areas with conditions like this. Honey from the more fortunate apiaries was taken to the ones short of stores. The weaker colonies were united and everything done to strengthen colony population and insure enough for winter.

Miscellaneous: During the past season our Inspection program was hampered in many ways. The high wages from war industries coaxed some of our inspectors into this work. The selective service did its share. Later in the season some of our men were forced to limit their inspection to a minimum because of the uncertainty of tires. Some were forced to quit entirely as their ration board refused to consider the work essential. It was difficult, but the time was well spent in convincing some of the boards the value of inspection in its relation to agriculture. Our Division of Apiary Inspection is in much better condition to go ahead this coming season than it was last.

Getting back to my apiary work we used only a very small number of comb honey supers, and only these few will have to be refilled. Personally, I am really glad that we are producing comb honey that may go to market without the red tape and restrictions the extracted producers face. I am still unraveling from some of the red tape, forms, and figures encountered in the Washington Conference, Aug. 10th. I am not alone; the O.P.A. must have been taped up themselves since they just unwound enough to send out the price release three months later. If our state had produced a normal crop of honey it would have been chaos waiting for an official release.

The meeting in Chicage will be over when this is printed. My hopes are that we form the foundation for the most constructive program in our history. There are many problems to be solved and those that cannot be solved are to be discussed to the fullest. We are facing a new year. We are also facing all the unpleasant conditions that go with war. It is difficult to get our minds fixed again on our goals. Now is the time, however, to try and relax and think of our future. We must study, plan, and act. As we make the day, we mold the future.—Carl E. Killion, Paris, Illinois.

ALABAMA, January 6

Weather: After getting off to a late start, winter began in earnest in December with several killing frosts and hard freezes. Temperatures have been normal or below, except during Christmas week. Christmas Day was very mild and the bees had a good flight. In the week following there were several days of heavy rain, enough to swell streams and flood lowlands.

Conditions: Bees generally are wintering well and prospects are better for a good crop of package bees this year than for several years. Most bees went into winter with ample stores and plenty of young bees. Unless there is a deficiency in rainfall, a late spring or continued cold from now until time for spring honey plants to bloom, there should be good early build-up flows. There is plenty of moisture to date.

Miscellaneous: Material for beeshipping cages, cans and screen wire have been hard to get for 1943 shipping. However, all shippers have ample supplies to enable them to ship their regular amounts this season.

Labor also is a problem. Beekeepers here have lined up available labor well in advance of their busy season. Due to the uncertainty of obtaining both labor and material very few beekeepers have increased their number of colonies during 1942. However, some have increased by buying up those bees whose owners were called into the armed forces. Shippers as well as honey producers are determined to make the colonies they have produce more in 1943. Even though a beekeeper may be a shipper he can still produce some honey and beeswax by putting forth that extra effort required. This should add much to our national production as a whole.

Gasoline rationing caused some disturbance among the beekeepers when they first received their certificates. Some had too much gasoline alloted to them, but most did not have enough to operate over one or two months. The local ODT officials have done a wonderful job of straightening things out for them, and they now have enough to operate their business.

Reports are coming in of early placing of orders for packages. Wise beekeepers should order their packages now.—Eugene D. Cutts, Montgomery, Ala.

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MAINE, December 30

Weather: Up until December 15, the fall and winter season has been pleasant and comparatively mild. Since then the state has had a week of subzero weather with temperatures as low as -10 to -25° F. The fall was favorable for bee flight and growth of clovers for next year. Goldenrod, however, did not yield well due to a prolonged period of drouth in July and August.

Honey Crop. Considerable honeydew was gathered during the past season. Much honey had a greenish or reddish tinge from this source. Quality, however, was good and practically all honey has been sold out of the producers' hands. Most beekeepers could dispose of several times their 1942 production without difficulty.

Miscellaneous: The State legislature which meets early in 1943 will have before it a Beekeepers' Bill. This Bill is sponsored by the State Association of Maine beekeepers and it is hoped it will receive passage. The Bill among other things will provide for: (1) The Registration of all colonies of bees in the state; (2) the inspection of bees and equipment for bee diseases; (3) a small compensation for colonies and equipment which are condemned for disease. All beekeepers in the state should let their state representative know that they want the bill to pass. —C. O. Dirks, Orono, Maine.

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ONTARIO, January 4

Weather: This is a cold windy day with the thermometer about 10 above at noon. The cold weather mentioned in our previous reports has continued with the exception of a day or two around Christmas when we had rain and above freezing temperatures. Sunday, Dec. 20th, gave us 30 below locally—unusually cold for any time of the year here so near Toronto. Snow covers the ground continuously, so clover is well protected. During this period a year ago, we had much milder weather with good bee flights quite late in the year. No bee flights have occurred locally since the first week in November. Following a cold spell so early in the winter, possibly we may get an earlier spring than usual.

Market: Very little honey is left and very few stores have any for sale aside from that in small glass containers, which are none too plentiful. No doubt most beekeepers, like ourselves, have sufficient for family use, and this fact seems to be well known to many who want to get some honey. At any rate every time I am in Toronto, I have to dodge friends who are eager to get a pail of honey.

While there is supposed to be a rigid ceiling on honey, we have had different cases brought to our attention where these rulings have been violated. When purchasers are eager to buy an article that is scarce, naturally they are not apt to report one who breaks the law. If the product being sold is plentiful, that is quite a different matter.

Beekeepers in the U. S. are to be congratulated in being allowed to use sixty-pound tins for honey in 1943. Here in Canada it looks as though we will not have that privilege unless existing regulations are drastically changed, and just now this does not appear likely. However, we are now assured of being able to use all containers now in the hands of beekeepers, without, as was first proposed, getting a special license for that privilege.

Miscellaneous: On page 41 of the last issue I am made to say that our experience has proven to us that bees winter just as well here in Ontario when we have had a fall flow to stimulate brood-rearing, as they do when we had no flows after late July. Of course, that is 100% orthodox and what we meant to say in copy (if we did not say so) was that bees wintered just as well with us when we had no flow after July as they did when they had a late flow of nectar.

Judging by a hasty reading of the rather complicated array of figures on page 16 relative to ceiling prices for honey in the U. S. we should judge that in the final analysis, there will not be so much difference as compared with ceiling prices here in Canada. Bulk price is stabilized at 12 cts. apparently, while here it is a half cent higher. Otherwise, our regulations appear to be much more simplified than those for the

U. S., but perhaps my judgment is faulty.

Elsewhere in the January issue we find the statement made that "there is nothing new under the sun" and we often think of that when looking over some of the things that my grandfather used over 60 years ago. We may have mentioned in these columns that dozens of wire screens for introducing a queen by confining her over a patch of hatching brood for a few days before being released, were among his equipment. Later they were heralded as a recent invention. Hundreds of his brood combs were equipped with a metal ring in the center of each comb to allow bees free passage laterally during the time they were clustered in cold weather. Sixty years ago or more he operated an apiary of 150 colonies at home and another apiary of close to 100 colonies some 60 miles away, near Orillia. There being no cars at that time he went by train, occasionally driving the distance with horse and democrat wagon. He used a very large deep hive with 12 frames, and before supers as we now use them were in use. He would extract two or three combs from one side of this large hive and then a few days later take combs from the opposite side. Increase was made by dividing the colonies and we can well remember peering down into the "dividing box" watching to find the queen as the bees were driven through a queen excluder to combs on the opposite side of the excluder.—J. L. Byer, Markham, Ont.

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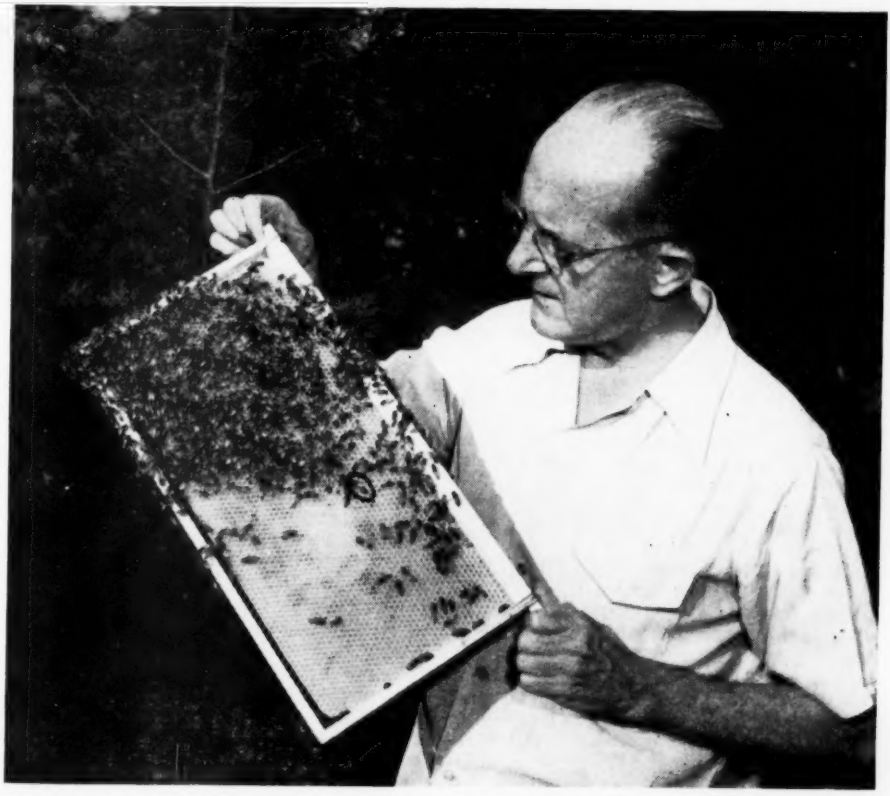
A Beginner Going Strong



This picture was taken when I was making my first inspection of a package of bees —7 days after receiving same. Note the queen encircled. This is the FIRST experience I have had with bees; however, it's my best hobby now, and the other night I picked up an 11-lb. swarm and added it to my hive by the newspaper method. While I have been identified with bees only one month, I'm "up four stories" and going strong.—E. A. Kettel, Malverne, Long Island. [The above was written in early July 1942.—Ed.]

Editorials

The Maximum Price Regulation No. 275 announced by the Office of Price Administration on November 28, and discussed in the January issue of Gleanings on page 16 is to be replaced by a specific dollar and cent ceiling according to the Sugar Section of O. P. A. Until the change is made prices on extracted honey are to be computed in accordance with the provisions of Maximum Price Regulation No. 275. This proposed change does not affect the raw honey price since this is already on a dollar and cent basis.

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Legumes grown in Ohio produce twenty times the amount of nitrogen sold within the state in commercial fertilizers. This statement coming from an authoritative source may be representative of the legume situation in other states. And remember, **honeybees make possible legume seed production,** enabling each farm to produce its own nitrate fertilizers. Thus scarce commercial chemical nitrates are saved for use in war explosives to help beat the Axis.

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Precipitation of snow augurs well for white clover because the snows in the East have been almost universal—so much so that when they melt during mid-winter great floods follow. Clovers thrive under snow and if the ground is well covered until towards spring, a clover crop will be secured this coming season provided we do not have a drouth or cool weather during the time when it is in full bloom. A genuine old-fashioned white clover crop added to alfalfa and sweet clover, orange and sage will be much needed this year.

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Those who may be tempted, in the future, to temporize with AFB, in trying to save bees, honey and wax, instead of disposing of diseased bees and combs promptly and properly when found, should read carefully the last paragraph of the report from Utah by William Moran, page 90, this issue. A state bee inspector should know whereof he writes. AFB is still one of our worst enemies.

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Be sure to read article on page 100 regarding Circular No. E-584 which contains information that is vital to our industry. See also page 113.

Honey is so scarce in some regions that it is grabbed up quickly when put on display in grocery stores. Be sure to read what G. F. Pearcey of British Columbia says about this, page 90 and 91 of this issue. Twenty-five cases of honey sold in two and one-half hours is quite a record.

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Rubber from Dandelions This was mentioned in the September issue of Gleanings, on page 607. At that time we explained that the Russian and U. S. Governments had been exchanging seeds. The contribution from Russia was "kok-sagyz," the rubber bearing dandelion which provides most of the rubber for that country. News dispatches indicate that this Russian dandelion has been grown extensively in New Jersey and that the seeds from the growth have been distributed to the 48 states to determine where this particular dandelion will do its best and be a source of rubber.

As pointed out in the September number, milkweed is another possible source. There seems to be some optimism in Washington to the effect that there will be new automobile tires and retreads for everyone by 1944—provided, of course, that motorists cooperate.

Beekeepers are interested not only from a standpoint of automobiles but from the further fact that the extensive growing of dandelions in certain sections of the country may mean an increased source of honey and pollen for brood-rearing. While honey from dandelions is strong and the quantity limited, yet it comes at a time of year when it is most important for brood-rearing, especially when supplemented by dandelion pollen.

Of course at this time we do not know how far Rubber Director Jeffers is warranted in his optimism but certainly beekeepers all over the country will welcome the introduction of this new dandelion to this country in spite of the fact that the back-lotters of our cities and towns will not be any too friendly to the possible increase of dandelions on their lawns. Home dwellers should welcome any plant that will help us to win this war.

Write to Beekeepers in Service We receive letters from beekeepers over the country who have entered military service. Practically all of these beekeepers are anxious for the day to come when they can return to their homes, their loved ones, and bees.

Some of the boys have asked us to put them in touch with beekeepers in their respective localities where they are stationed, in order that they might visit these beekeepers during their leaves of absence. We have been pleased to do this.

We hope that all who have beekeeping friends in the service will take time to write these boys because they do appreciate letters and news from their home towns.

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Farm Machinery A top priority rating of AA-1 has been assigned by the War Production Board to delivery of critical materials necessary to the manufacture of Farm Machinery included on the current program. The rating will be applied to material for new machinery as well as repair parts for existing equipment.

This will enable bee supply manufacturers to obtain more quickly critical materials needed in the manufacture of supplies. It means that the manufacturers will have a better chance of obtaining the scarce material needed to manufacture their quota of bee supplies. Heretofore this priority has been used only by the Army and Navy.

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Honey Granted Unlimited Black Plate Closures for Glass The War Production Board January 1 amended Conservation Order M-104 covering closures for glass. This order covers the closures used for glass containers used to pack fruits, vegetables, juices, baby food, honey, and certain other items. Honey along with some 30 other items was given an unlimited use of black plate closures. The Order covers some 170-odd items.

As mentioned on page 55 in the January issue of Gleanings, Conservation Order M-81 limited the use of metal cans for packing honey to the 60-lb. size only. Provision, however, was made for the feeder cans for package bees

The new order M-104, covering glass closures was intended to permit a shift from tin plate containers to glass containers for honey.

Beekeepers Exempted from Draft The Selective Service System in their release No. 175 effective January 16 to the Local Draft Boards defined 25 colonies as equal to one war unit. Originally 16 units were required for one full draft deferment. At the present time 12 is the standard and it is expected soon that this will drop below this figure. Under the present requirements of 12 units a beekeeper having 300 colonies would be eligible for deferment, or a general farmer operating land and animals can now figure 25 colonies of bees as contributing to a deferment.

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Bee Shippers Also Have Problems The late A. I. Root was one of the first to ship bees in combless packages. He started in 1878, sixty-five years ago.

Since that time marvelous developments in bee and queen production and shipping have occurred. At present around one-quarter of a million pounds of bees are shipped by express, parcel post, and truck, mostly from South to North, during one season, from early April until late June.

The bulk of these packages goes to commercial beekeepers who are interested in securing profitable returns, in surplus honey the same season.

This means that many packages are needed quite early—during April and May. This heavy demand for bees and queens creates problems that are quite difficult for Southern shippers to solve.

Two articles in this issue, one by Morley Pettit, page 65, the other by H. S. Fortune, page 70, are likely to make the receivers of packages and queens more conscious of some problems which southern bee shippers have to solve in their efforts to give quality and service.

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Heavy Winter Loss is Predicted Judging from reports that come in from various sections of the North, it seems apparent that we may expect an unusually heavy winter loss of bees. This loss may be due mainly to a shortage of winter stores. Some beekeepers took away too much honey last fall and did not leave the bees a sufficient amount for winter and early spring stores. Furthermore,

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conditions that obtained in some sections of the North were not favorable for the development of populous colonies last fall.

Some who emphasize the necessity of heavy winter packing may perhaps attribute the winter loss of bees to the lack of adequate protection or packing during the winter months. While ample protection against the elements is essential in wintering bees successfully in the North, it is also essential to have each colony very populous, with a superabundance of honey and pollen to meet food requirements. **What is inside of the hive seems more important than what is on the outside of the hive during the winter and early spring months.**

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Beekeepers May Attend their Own Funerals A few days ago we received a letter from a beekeeper in Indiana, who said among other things, "I left much more honey on this fall than usual, looking forward to next year. Some of the fellows that tried to make a killing this season will probably attend their own funerals."

There was a tendency last fall to take too much honey away from the bees and thus attempt to winter colonies on short rations. This is like killing the goose that lays the golden egg. Such a practice does not pay. Taking away honey in the fall that rightly belongs to the bees for winter stores may give a small temporary profit, but in the end it will prove to be disastrous. We fear many colonies over the country are going to die before spring, due to shortage of food.

This may be the year when bees are going to be needed more than ever before, to produce the maximum amount of honey and wax, also to pollinate blossoms.

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Department of Agriculture Dissatisfied with Quota A story appeared in the Journal of Commerce and Commercial predicting that production of Farm Equipment during the first half of 1943 "will be permitted to exceed substantially" the L-170 Farm Equipment Limitation Order quotas. (See Dec. 1942 Gleanings, page 746). The story went on to state that the Department of Agriculture officials have been dissatisfied with the Order from the start and that they have claimed that quotas are insufficient for the 1943 farm production program. The story added that Agricultural experts in the W. P. B., however, maintain that farmers could meet that program on the basis of equipment output provided in this program and that the W. P. B. Requirements Committee refused to grant a larger amount of steel.

It was further stated that Secretary Wickard had appealed to Donald Nelson and submitted a request for a Farm Equipment Program larger than that which he originally advocated and that conferences regarding this request are still in progress.

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Package Bees Need Pollen During a recent interview with Frank E. Todd, formerly with the Field Station at Davis, California, and at present at Beltsville, Maryland, Mr. Todd said that approximately one pound of pollen is required in the production of one pound of bees. Dr. C. L. Farrar, of the Madison Field Station, recently stated at a Wisconsin beekeeper's meeting that a two-pound package of bees plus two pounds of pollen would give better service than a three-pound package without the addition of pollen.

Most beekeepers who are enlarging their apiaries retain combs containing honey and pollen to put into hives intended for packages of bees. This procedure results in rapid development of the packages in the normal colonies. On the other hand, beginners do not have combs of honey and pollen, but rather, they have only frames containing full sheets of foundation and the packages are fed sugar syrup. If pollen from natural sources is available and abundant at the time packages are put into hives containing sheets of foundation, the packages are likely to develop quite well. If one or two combs of pollen were added to each package this would doubtless result in very rapid development of packages into normal colonies. The time may come when beekeepers located in regions where pollen is very abundant, may make a business of supplying combs of pollen where they are needed during the building up period of spring.

It should be kept in mind, however, that the spread of A.F.B. is possible through transferring combs of pollen from one hive to another. It would be absolutely necessary, therefore, to have apiaries supplying combs of pollen, thoroughly inspected and free from disease.

Just News

At the December 19th meeting of the Middlesex County Beekeepers' Association it was voted to omit the January, February, and March gatherings in order to conserve fuel, electrical energy, and transportation equipment. Our next will be our annual meeting on April 24th, 7 P. M. 19 Everett St., Concord, Massachusetts.—A. M. Southwick, Pres.

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The Cook-Du Page Beekeepers' Association of Illinois will hold its annual meeting and banquet on February 13, 3:30 P. M., at Mrs. Marquardt's Restaurant, corner of Van Buren and Sherman Streets, Chicago.

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The following beekeepers' program will occur on Feb. 11, 1943, Room 106, Dickens Hall, Manhattan, Kansas, during Kansas State College Farm and Home Week.

R. L Parker, Professor of Apiculture and State Apiarist, Presiding.

9:00 a. m. - Apiary Inspection Service in 1942. R. L. Parker.

9:15 a. m. - Establishment of Colonies of Honeybees. F. B. Paddock, Extension Apiarist and State Apiarist, Iowa State College, Ames, Iowa.

10:00 a. m. - Production of Honey for Home Use. R. L. Parker.

10:45 a. m. - The Care of Honey. F. B. Paddock.

1:30 p. m. - Beeswax Production. F. B. Paddock.

2:30 p. m. - Communication Among Bees in Relation to Food Collection. R. C. Smith, Professor, Department of Entomology. — Motion Pictures.

3:00 p. m. - The Sweet Clover Weevil, a New Serious Pest of the Sweet Clovers. R. L. Parker.

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At the annual meeting of the Oregon State Beekeepers' Association held in Portland, December 4 and 5, the following officers were elected: H. J. Moulton of Portland, President; Callie M. Burt, of Newberg, Vice President; John M. Burt, of Newberg, was re-elected Secretary and Treasurer. Mr. S. D. Williams, was given life membership in the Association.

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The Nebraska Honey Producers' Association will hold its annual meeting during the week of Organized Agriculture, on the days of February 3rd and 4th, at the College of Agriculture, Entomology Building, Lincoln. The speakers will be R. F. Remer, General Manager of the Sioux Honey Company, Sioux City, Iowa, and F. L. Swanson, Manager of The A. I. Root Company, Council Bluffs, Iowa. These speakers will be heard on February 3rd. On the 4th we will be addressed by a national speaker in assembly with the entire group attending organized agriculture meetings. This will be on the general subject: "Gearing Agriculture to the War Effort and the Problems Involved." Each day will be very full and it will be necessary to be in assembly promptly on the hour specified. Every member who possibly can should attend this meeting. —Ralph W. Barnes, President of Nebraska Honey Producers' Association.

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Circular E-297, "List of Dealers in Beekeeping Supplies, Package Bees, and Queens," published by the Bureau of Entomology and Plant Quarantine, Beltsville Research Center, Beltsville, Maryland, is being revised and brought up to date. This list is given wide distribution as it is used in answering inquiries as to where package bees, queens, beekeeping supplies, etc., can be purchased. If dealers of such commodities wish to have their names included in the new edition, they are requested to write to the Division of Bee Culture, Beltsville Research Center, Beltsville, Maryland, giving their name and address, and what they wish listed, such as bee supplies, Carniolan queens, comb or combless packages, etc. The new list will be closed to entries February 20, 1943.

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The 1942 Honey Crop in Canada amounts to only 19,836,000 pounds, according to the first estimate of the Dominion Bureau of Statistics. This tentative estimate is based on reports as of September 30 furnished by provincial apiarists and marketing organizations and is subject to revision when data on extracting operations are complete. The 1942 production is 7,636,100 pounds, or 28 per cent smaller than last year's crop of 27,472,100 pounds, which was a crop of average size. In fact, due to the cold, wet gathering season, the 1942 crop is one of the smallest on record, and although there was a six per cent increase in the number of

(Continued on page 116)

Why Beekeeping is Considered an Essential Industry

Our readers know why our industry is in a preferred class. It was not because of honey and beeswax alone, although both are important, but it was because of the indespensable service performed by honeybees in pollinating our fruit, vegetables, and legumes, resulting in greatly increased quality and quantity of foods.

James I. Hambleton, in charge of the Bee Culture Investigation work in the Bureau of Entomology, at the very start saw the importance of this and got busy, with the result that we now have from the Department of Agriculture, Washington, D. C., the most complete Circular (No. E-584, December) ever published with the seal of the Department of Agriculture back of it and showing how honeybees, the only insects under the control of man, are increasing our food crops. Other wild insects help some but their help is only minor.

The Circular covering over 38 large pages presents proof from high authorities showing that "honeybees are the most numerous of flower-visiting insects."

Without this work of Hambleton and his staff, the industry of beekeeping could not have obtained many of the benefits it now enjoys. Honey, while a valuable food, has been considered by some officials in the Federal Government a luxury item. In the case of beeswax, all who are close to the industry and government requirements see a pending shortage. Government men have been slow to recognize the danger. But the value of bees as pollinators has been accepted by government officials and most of the help received from government agencies has been on the basis of this function of the bees. Such concessions as permitting 60 lb. tin cans to be used by the industry, glass closure caps granted, and sugar for bee feed as well as draft deferment have resulted chiefly in consideration of the contribution of the bees to general agriculture.

It means much to have an authoritative circular from the Department of Agriculture explaining in detail the value of the beekeeping industry to the war effort.

The following are excerpts taken from the Circular and speak for themselves:

INTRODUCTION

Most people have some appreciation that honeybees are the only source of honey and beeswax. Few realize, however, that, although the beekeeping industry produces in excess of 200 million pounds of honey and 4 million pounds of beeswax annually, these are merely byproducts, and that its principal role is in the pollination of the many agricultural crops for the production of seed and fruit. Without the help of insects to effect pollination, many species of plants will not set seed or produce fruit no matter how well they are cultivated, fertilized, and protected from diseases and pests.

Although the honeybee is the most important pollinating insect, it is but one of many species of the Apoidea group so necessary for the perpetuation of flowering plants. Various species of flies, beetles, and other insects also visit flowers and to some extent pollinate them. Nectar and pollen are rarely the principal food of such insects, whereas these substances supply the entire nourishment of both the young and adults of honeybees and wild bees.

When nature shows a proper balance between plants and pollinating insects, both the plants and the insects flourish. Agricultural development, however, has seriously interfered with this balance. It has demanded the growing of certain plants in enormous acreages and unwittingly destroyed native pollinating insects as well as their nesting places. As a result the burden of pollination has been increased to such an extent that wild bees are no longer adequate or dependable, particularly where agriculture is highly developed. Both the reduction in wild beneficial insects and the increase in the crops requiring insect pollination have been gradual. While these changes were occurring commercial beekeeping had its inception, and fortunately so, since the presence of honeybees in most areas has not only overcome the shortage of wild pollinators but has permitted more thorough pollination than would have been possible under natural conditions. Consequently, plant growers and farmers generally have not been greatly concerned about pollination simply because someone else has taken care of the bees. No State or Federal agency has assumed the responsibility for conserving wild pollinating insects, although some species, bee for bee, are more efficient than honeybees and will work under more adverse conditions. For this reason measures should be taken to conserve our native pollinating insects.

In practically all agricultural regions honeybees are the most numerous flower-visiting insects, and in many places the depletion of wild pollinators is so acute that honeybees have to be brought in especially for pollination. The fertilization of plant flowers is so essential that beekeeping must be carried on to maintain a profitable agriculture, and it may be necessary to subsidize the keeping of bees, since there is no practical substitute for honeybees in the transfer of pollen from flower to flower and plant to plant.

Owing to conditions brought about by the present war the beekeeping industry must be safeguarded. Beekeeping can be mastered only through years of experience. It cannot be learned as a trade is learned, and there is no floating population of persons seeking employment in beekeeping. The fact that bees have a propensity for stinging discourages many persons from keeping bees, and only certain persons possess the proper temperment to be beekeepers. For these reasons every experienced beekeeper should be encouraged to continue with his bees. Since only experienced persons can handle bees, it is almost impossible to find anyone capable to taking care of an apiary in the absence of the owner. Therefore, beekeepers called into the military service often have no other choice than to kill the bees, melt the combs, and sell the wax and used equipment. Bees are not good collateral, for neither the banks nor the Government will accept them as security for loans.

The present ceiling on honey prices and the demoralized condition of the honey market are proving highly discouraging to beekeepers. Another obstacle is the difficulty of obtaining beekeepers' supplies. These facts, combined with the high wages obtainable in industry, are causing many small-scale, sideline beekeepers, having 50 to 100 colonies, to give up their bees and take employment in factories and elsewhere. Such curtailment of the beekeeping industry will not only reduce the production of honey and beeswax but seriously interfere with adaquate pollination.

In the following pages literature is cited in support of the premise (1) that wild pollinating insects are deficient in number adequately to pollinate our agricultural crops, and (2) that at least 50 agricultural crops depend upon honeybees for pollination or yield more abundantly when bees are plentiful.* The specific fruit and seed crops mentioned in these references are listed:

*These quotations are for the most part from plant specialists, with only a few from authorities on apiculture.

FRUIT CROPS

Almond, apple, apricot, avocado, blackberry, blueberry and huckleberry, cherry, cranberry, cucumber, gooseberry, grape, muskmelon, peach and nectarine, pear, persimmon (native), plum and prune, strawberry, tung, watermelon.

SEED CROPS

Alfalfa, asparagus, broccoli, brussels sprouts, buckwheat, cabbage, cantaloup, carrot, cauliflower, clovers (alsike, crimson, red, strawberry, white, and ladino white), collards, cotton, cucumber, kale, kohlrabi, lotus, onion, pepper, pumpkin, radish, rape, rutabaga, soybean, squash, sunflower, sweetclover, trefoil, turnip, vetches, watermelon.

POISONING FROM INSECTICIDES

Hundreds of colonies of honeybees are killed each year by arsenical sprays and dusts. Often losses occur long after the insecticides have been applied, when brood fed stored poisoned pollen. Under such conditions bees gradually dwindle and die, and often the owner is not aware of the true cause.

At one time poisoning of honeybees was confined largely to the fruit blossoming period, when bees took poison from open blossoms, but now the poisoning continues throughout most of the summer because many cover sprays are applied to control injurious insects, particularly the codling moth. Sprays and dusts falling on cover crops in orchards kill both honeybees and native bees.

From the knowledge of the habits of wild pollinating insects and the fact that the queens obtain their food directly from flowers, they would appear to be even more susceptible to insecticides than honeybees, since the queen's food is not nectar and pollen but royal jelly. Brittain made observations on this point, but came to no definite conclusions as to the over-all effect of the use of insecticides on wild pollinating insects. He did find, however, lethal amounts of arsenic in pollen in the nests of wild bees.

VALUE OF THE HONEYBEE IN POLLINATING CROPS

On the following pages will be found a few selected references to the value of the honeybee in pollinating crops, as mentioned in articles by recognized authorities in horticulture and agronomy.

Dietz, H. F.

1925. Pollination and the honey bee. Ind. Conserv. Comn. Pub. 52, 20 pp.

pp. 19-20: One thing is certain. **The honeybee represents the highest point that has been reached in the insect world as a flower pollinator. Its own existence in both the larval and adult stage are dependent on either pollen or nectar. The**

(Continued on page 112)

Asked and Answered

Snow Covered Hives

Question.—My five hives of bees are practically covered with snow. Will the bees suffer any as a result of this?—John Halsey, Mich.

Answer.—No. Snow is splendid protection for bees during the winter. Occasionally an ice or sleet storm may close the bottom entrances of hives temporarily. However, snow is porous and does not cut off ventilation. Hives of bees covered with snow are better off than hives without any snow protection.

Keeping Mice Out of Hives in Winter

Question.—I noticed in going by one or two of my hives of bees that small mice had gotten in. I tried to get some wire ½-inch mesh but this is impossible now. But I have some wire in stock three mesh to the inch. This, of course, would keep the mice out, but do you think it would retard the bees too much in going through it?—E. H. Newell, N. H.

Answer.—Any screen that will keep out mice but will at the same time permit bees to pass through, will be all right during the winter months. A quarter-inch mesh screen does very well. A one-half inch mesh screen might not exclude small mice.

Using Cyanogas for Killing Bees in the Siding of a Building

Question.—There are two churches in this community in which bees have been making their homes for some time. They are in the side wall in both cases. I would like to know whether cyanide gas is absorbed by the honey, in case a person should use it to kill the bees. Has any test been made with this gas and to what extent it is absorbed by honey? What would be your recommendation for removing the bees from buildings, such as churches and homes?—S.L.Loewen, Kansas.

Answer.—Cyanide gas is sometimes called Cyanogas and has been used to kill bees. Bee inspectors, when they find a diseased colony, destroy the bees by putting about one tablespoonful of this gas, which by the way comes in powder form, into the entrance of the hive. The gas being lighter than air travels up and destroys the bees immediately. Cyanogas does not make honey in the hive unfit for human consumption, provided the combs are well aired. If Cyanogas is used it would be well to have the buildings vacated during the time the gas is applied and for a time following the application. Some of the fumes might seep through the walls of the building into the rooms. This gas when it is confined is deadly poison. It is quite necessary to use Cyanogas with extreme caution. Read directions on the container carefully. A state bee inspector has a gun for blowing the powder into a hive. This same apparatus could be used for blowing Cyanogas into the hole found in the siding of the building, leading to the bees. It would seem preferable to contact the bee inspector in the event that Cyanogas is used.

Dividing Strong Colonies in Spring, Over One Bottom Board

Question.—I am planning a little for another year. Will you criticise this plan? Last year I had no swarms. I may have some this year for all my queens are two years old, or will be, and it may be that some are older. I propose that late in March, I shall lift about one-half the brood, taking with it the old queen, and place it in a third story, having an empty super between the upper and the lower stores. I will have a queen excluder on the top of the lower story, and an inner cover on the bottom of the upper story. I will cover the hole in the inner cover under the upper story with a piece of zinc queen excluder, so the bees may go down and at the same time give to them an entrance at the bottom of the upper story. In the fall I can kill the old queen in the upper story, and then remove the queen excluders, and the colony is united, and it has a young queen. The above operation I have performed leaving the old queen below, and leaving the upper part of the family to raise the new queen. This plan did not fail at any time. The advantage that I see in placing the old queen above, is that if she has the swarming instinct, she can be easily cared for without disturbing the stronger part of the colony. I would be pleased to know what you think of the plan.— Thomas W. McKinney, Pa.

Answer.—Theoretically, the outline of seasonal apiary management as presented in your letter should work to good advantage, provided the manipulations are made at the proper time and the season is favorable for beekeeping, which means an abundance of nectar and pollen. Dividing the brood, or lifting up the second story and putting in its place a super of empty extracting combs, should not be done too early. You mention March. This seems a little early. However, you are exactly one degree south of Medina and warm weather may come earlier in Philadelphia than it does here. It would seem that during the fruit bloom and dandelion flow would be plenty early enough to perform this manipulation. Two years ago we performed this manipulation on a half of each of two apiaries. We did not bother to look for queens. In some instances, the queens were above

and in others, they were below. We had the third story of brood on an inner cover, the center hole being covered with queen-excluding zinc and gave a small upper entrance. Well, something happened: Right after we divided the colonies there came the coldest spell of spring weather that we have ever seen and cool weather hung on for a time, interfering with normal mating of queens. This bad weather interfered with our plans and resulted in weakening the colonies which you can readily understand would occur, due to the fact that the heat from the colony below, at least a part of it, went into the empty super above. Of course, we kept the main entrances reduced but even this did not prevent a retardation of normal brood-rearing. Now you will see why we used the word "theoretically," at the beginning of the letter. If we had not had the experience referred to, we would probably suggest that you carry out your plans as outlined in your letter. Having had the experience we suggest that you at least delay dividing the colonies until you are reasonably sure warm weather has arrived also that there are drones of proper age for mating with queens. It has been our experience that virgin queens are more likely to mate successfully when the hives are on the ground than they do when hives occupy third stories. This would be one point in favor of raising brood with the old queen above and leaving the bottom brood chambers queenless for rearing new queens. Regardless of which method you use, you are likely to have a percentage of failures at least covering a period of years. If colonies are prone to swarm during the fruit bloom and dandelion honey flow, dividing the colonies in the manner suggested in your letter, will certainly be a swarm control measure.

Scrapings of Propolis Causes Itching

Question.—I have been keeping bees for a number of years. I have at last determined that I have a hand dermatitis caused by the propolis, gathered by the bees, which comes in contact with my hands. The dermatitis is manifested first by a burning redness followed by small blisters or vesicles over my hands and between my fingers. In about a week the vesicles dry up and turn brown and peel off. The cycle then repeats itself. Do you know of any cure?—Mark Tyson, New York.

Answer.—You may be and probably are more allergic to fine propolis dust on the skin of your hands than the average beekeeper. The trouble becomes more manifest when one scrapes sections or brood frames or parts of hives in a cold room when the dust flies and gathers on the backs of the hands. In most cases where the hands are washed immediately, no trouble occurs. We always advise, however, that whenever scraping propolis from hive parts is done, one should use gloves. Ordinary cheap gloves are as good as any. The average beekeeper experiences no ill effects from opening hives or doing any work in the apiary unless he is cleaning the bee glue off the frames. If propolis is dry and the room is cold, especially near freezing, then the dust will fly. You do not explain whether you have trouble at any other time except when scraping propolis. If you have difficulty in just merely opening a hive or otherwise handling combs, yours is the first case reported.

Combs of Granulated Honey for Feeding Package Bees

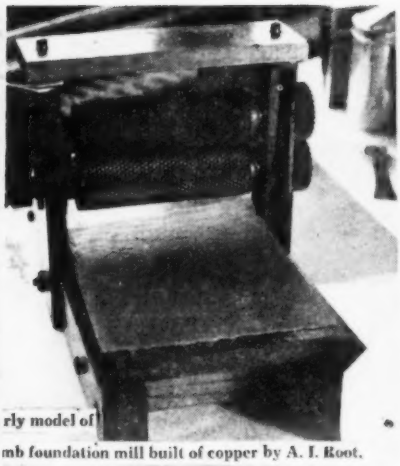
Question.—My brood-chambers and supers of frame honey were stored in an unheated building and 40-below temperature has caused granulation. Do you consider the honey suitable for feeding package bees? In the light of sugar restrictions would it be advisable to melt some of these combs and feed in place of sugar syrup? —F. D. Noble, Saskatchewan.

Answer.—The combs containing granulated honey should be suitable for feeding package bees, especially after warm weather arrives. You will find granulated honey will gradually be liquefied by the heat from the cluster of bees. Of course, some of the granules will be removed from the cells and dropped on the bottom boards of the hives. However, when warm weather comes, the bees will collect water to mix with the granulated honey, in order to make it available as bee food. If you were to melt up the combs containing granulated honey, your perfectly good drawn combs would then be destroyed. Of course, the wax secured from the combs would be worth something. However, good drawn combs are valuable property. If some of the combs contain large patches of drone cells, you may wish to melt them up, separating the wax from the honey. If you could keep your granulated combs in a warm room from now until spring this might help to retard further granulation.

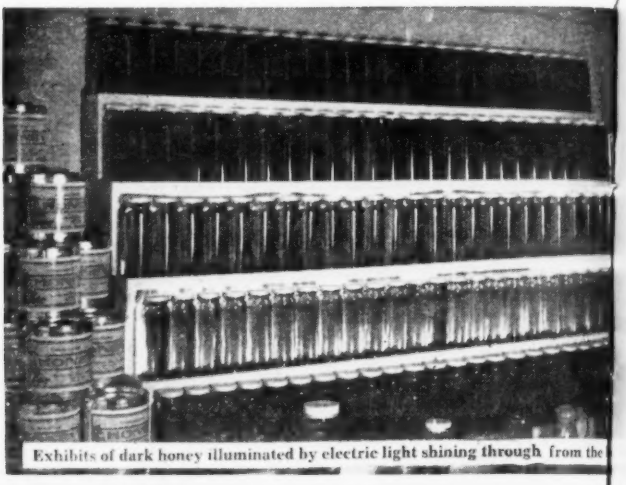
Getting Virgin Queens Mated from Third Stories

Question.—Is this a successful way to raise 150 queens? I contemplate raising three frames of brood and bees above an inner cover. The three frames will be queenless. The inner cover will have a

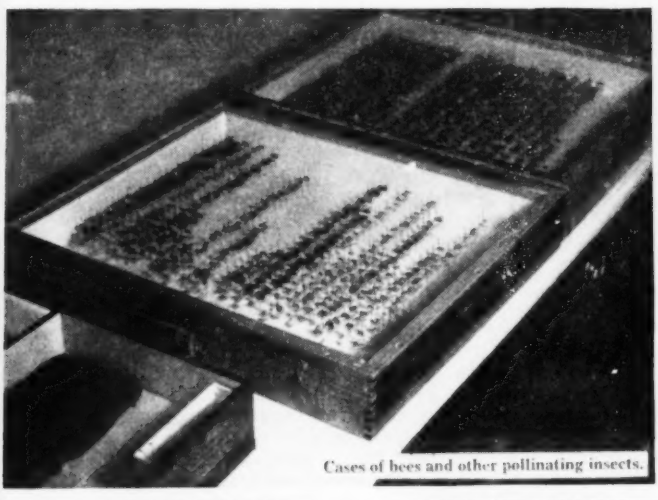
(Continued on page 115)



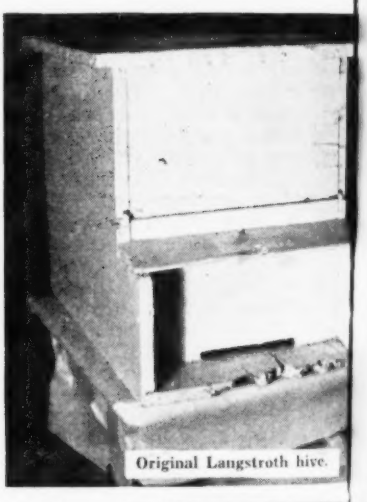
rly model of
mb foundation mill built of copper by A. I. Root.



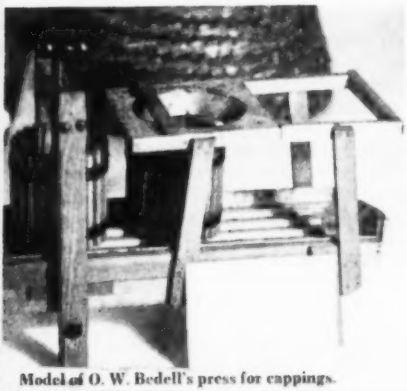
Exhibits of dark honey illuminated by electric light shining through from the



Cases of bees and other pollinating insects.



Original Langstroth hive.



Model of O. W. Bedell's press for cappings.

Some of the very early uncapping knives

A part of the exhibit at the Museum of Beekeeping Industry, Ithaca, New York

Talks to Beekeepers

By M. J. Deyell

Natural Habitats of Honeybees

In last month's talk we discussed the inmates of the hive, or, members of the honeybee family. In this talk we shall take up, first, the habitats or natural homes where bees are found, then the modern houses or homes where bees are kept, since the activities of the honeybee have been commercialized by man.

The Editor in Clover

Swarms or colonies of bees are found in hollow trees, in crevices between rocks, also between sidings of buildings. Enormous colonies have been transferred from walls of buildings to modern movable-frame hives. In some instances combs seven or eight feet in length, with honey in the upper portions and brood in the lower portions, have been taken from between the walls of buildings. Quite often the portions of the combs containing brood are saved and fitted into empty brood frames, then tied with strings, later to be put into modern hives, together with the bees.

It is not uncommon to secure a washtub full of combs containing delicious honey, taken from the wall of a dwelling house.

Cutting Bee Trees

This is considered great sport by some who appear to have a natural aptitude for such work. Bees may be lined to a bee tree, the tree cut down (if the owner of the tree will give permission), then the bees, brood, and honey properly disposed of. When this work is done in the fall of the year it is frequently possible to secure quite a quantity of honey. The fall of the year is a poor time, however, to attempt putting a swarm of bees into a hive, because bees do not get established readily when the weather is cool. If the bee hunter can secure a hive with drawn combs and can put the bees into this hive, then feed them, either sugar syrup or give combs of honey, he may save the bees.

Thousands of colonies of bees are found in box hives, also in log gums, especially in parts of the South. Bees should be transferred from such hives to modern equipment.

The Bees' Modern Home

When L. L. Langstroth invented our modern movable self-spacing frame hive in 1852, he perhaps did not realize how this discovery would revolutionize the beekeeping industry. Prior to that time it was difficult, if not impossible, to properly examine the interior of the hive to find the queen or to perform necessary manipulations in the handling of bees. Since then, beekeeping has gone ahead by leaps and bounds, until at present the hive Langstroth invented, or a modification of it, has become practically universal, wherever bees are kept commercially.

There is said to be almost 5,000,000 hives of bees in the U. S. A. at present. The amount of honey produced in this country is around 200,000,000 pounds annually.

Bee Spacing Very Essential

Beginners in beekeeping and, in fact, some experienced beekeepers may not realize the importance of having correct bee spacing between and around frames. Hives that are properly made with the furniture fitting correctly, are easy to manipulate. If the space at the top, ends, sides, and between the frames is approximately ¼", frames may be removed without killing or squeezing bees. There is usually ⅞" space below the frames especially during warm months to provide ventilation. While ¼" is about right for a bee space, the minimum should not be less than $\frac{3}{16}$" and the maximum should not be more than 6/16", or ⅜". If the space is less than $\frac{3}{16}$" the bees will fill this space with propolis. If the space is greater than ⅜" the bees are likely to build burr comb

Buying a good sized swarm from a nearby beekeeper is a good way to make a start. One is enough to begin with.

which, as experienced beekeepers know, hampers easy manipulation of hives.

Not so long ago, we learned of a carpenter who became interested in bees, and decided he would make his own hives. Accordingly, he made a rather superficial investigation of the interior hive fixtures. Instead of leaving some space at the top of the brood frames, he decided to have the cover of the hive fit snugly. After completing a number of hives, he discovered his mistake. Obviously, he would kill thousand of bees that occupied the tops of the frames at the time covers were put on. It was necessary for this carpenter to investigate more carefully the interior measurements of a standard hive, also exact measurements of frames and all hive parts before making more hives.

Colonies can be handled without much danger of getting stung, provided a few simple rules for operating the hives are followed.

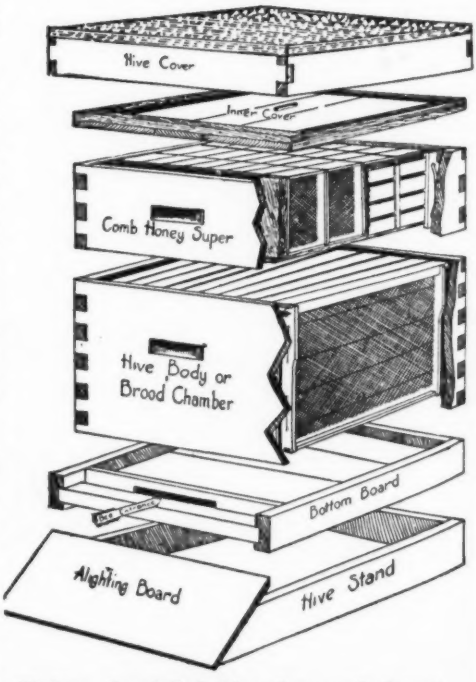
Those Beginning With Bees This Spring

To be successful with bees it is necessary to acquire all the theoretical knowledge possible, through reading good bee books and bee journals, also by attending beekeepers' meetings when possible and by contacting successful beekeepers. Send to a reliable bee supply manufacturing house for a catalog which should contain considerable information on hives and beekeeping equipment.

Some beekeepers seem to think that bees can be domesticated. Such is impossible. They respond to stimuli in the same manner regardless of where they live—in a tree or a modern hive.

Bees in a tree or the siding of a building, have the urge to store up nectar and pollen for their needs during part of the year when they are inactive—the winter months. Man has taken advantage of this urge and has induced bees to store more surplus honey than they actually need for winter food. This surplus honey is taken away and thus man has commercialized the activities of the honeybee.

Unfortunately, the owner of the bees frequently takes away more honey from the bees than he should, and, consequently, the bees die of starvation during winter months. Starvation of bees rarely if ever oc-



Modern dovetailed hive for comb honey in the skeleton form.

Typical box hive with an earthern crock for a comb-honey super. These crocks would be cold, but when once filled would keep the honey safe from leaking after taking off the gum.

curs in their natural habitat, especially in the case of bees in a tree containing a large cavity where an ample amount of honey may be stored.

In modern beekeeping it is necessary to keep in mind that bees need a reasonable amount of **protection;** that they need **comb space** for storage of food, also for brood-rearing; also that they need abundance of **food**—honey and pollen.

If beekeepers would remember these three requirements, there would be fewer colonies running along on starvation rations and furthermore, there would be more surplus honey secured.

Later on in these talks we will describe the food chamber, and how, if properly used, it solves the food problem in beekeeping.

The beginner should not attempt to start with too many hives of bees. It is preferable to have as many as can be cared for properly rather than try to keep more than can be managed successfully.

Most bee supply manufacturers offer beginners' outfits, each containing the items necessary to make a start with bees. For example, a bee smoker, a bee veil, bee gloves, and a hive tool are needed to properly manipulate a hive of bees.

The beginner may be at a loss to know whether to work for extracted or comb honey. Generally speaking, it is preferable to produce extracted honey, at least the first year, until more experience is had in handling bees. The production of comb honey in sections is quite an art and is learned only through study, experience, and close application of principles that govern success. Some produce comb honey in shallow frames from the starters of thin super comb foundation. The combs of honey are cut out of the frames into a crock or some such container, then fresh starters are put into the frames for the bees to use again.

Ordering Package Bees

While it is possible to start colonies of bees from swarms which may be purchased from nearby beekeepers, or captured as they fly away from apiaries, it is more satisfactory to start with packages of bees. These packages come in two and three pound sizes and are shipped from the south. A three-pound package put into a hive in this latitude, about the first of May, should, with the proper management, develop into a normal colony of bees by the first of July. It

(Continued on page 117)

An old log gum hive in Georgia that originally contained a colony of bees.

Buy and Sell Here

CLASSIFIED ADS

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 8 cents per counted word each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in the 10th of month preceding.

HONEY FOR SALE

WILL HAVE more tupelo honey May 20th. Marks Tupelo Honey Co., Appalachicola, Florida.

HONEY FOR SALE—We buy and sell all kinds, any quantity. H. & S. Honey & Wax Co., Inc., 265-267 Greenwich St., New York.

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

HONEY PACKERS—Write us for prices on carload lots of California and Western honeys. We stock all varieties. Hamilton & Co., 1360 Produce St., Los Angeles, Calif.

NEW YORK State comb and extracted honey; buckwheat and clover, any quantity, all size packages. Five-pound pails my specialty. Edward T. Cary, Midland Ave. and Tallman St., Syracuse, N. Y.

SOLD OUT of Michigan clover honey. We thank you. Will see you another season, with more bees. Again thanking our many customers, we remain, E. D. TOWNSEND & SONS, Northstar, Michigan.

FOR SALE

QUEENBEE PAINTING outfits $1.00 postpaid. Southwick Apiaries, Waban, Massachusetts.

MAKE CLEANSING CREAM with Beeswax, formula dime. Walter Johnson, Edinburg, No. Dak.

Your wax worked into medium brood foundation for 16c pound; 100 pounds, $12.00; thin super, 22c, Fred Peterson, Alden, Ia.

FOR SALE—1000 used bee shipping cages, mostly 2 lb., good condition, 20c each, feeder cans included. A. A. Martin, Mitchell, Nebr.

COMB FOUNDATION at money-saving prices. Plain, wired and thin sections. Wax worked at lowest rates. Comb and cappings rendered. Robinson's Wax Works, Mayville, N. Y.

FOR SALE—1-inch honey pump, flat belt drive. In good condition. Priced at $32.50. 1 Brand capping melter, large size, never put into use. Price at $55.00. Ellsworth Apiaries, Tarkio, Mo.

WRITE FOR CATALOG. Quality bee supplies at factory store prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Bee Supplies, Onsted, Michigan.

FOR SALE: Root supplies for 200-colony apiary. Metal covered hives, 300 new supers, 500 slightly used; all nicely painted. Positive proof never diseased. 45-frame Simplicity extractor, capping melter, storage tanks, wax press, queen excluders, and all accessories. Invoices over $1800 at knocked down catalog prices. Sacrifice at $850. Oliver Troughton, Seneca, Kansas.

THE ONLY complete line of wax rendering equipment ever offered—the "Perfection" Line. A size and type suitable for every commercial beekeeper. Write for descriptive circular. Robinson's Wax Works, Mayville, N. Y.

SAVE MONEY by letting us work your wax into wired or regular comb foundation. Large catalog describes everything. You pay only wholesale factory prices, as we have no agents. Walter Kelley Co., Paducah, Kentucky.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We cannot guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C. O. D. terms except where the buyer has thoroughly established his credit with the seller.

WE PAY CASH for extracted clover honey. Fair-Field Honey Company, Millersport, Ohio.

HONEY WANTED—State kind, quality, amount. Ellsworth Meineke, Arlington Heights, Ill.

WANTED—White and amber honey; any amount. D. F. Treap, 317 Keenan Ave., Cuyahoga Falls, Ohio.

WANTED—Honey and beeswax. Mail samples, state quantity and price. Bryant & Cookinham, Inc., Los Angeles, Calif.

HIGHEST cash return made the day we receive your beeswax. Write for shipping tags and quotations. Walter T. Kelley Co., Paducah, Kentucky.

CASH PAID for extracted white clover or light amber. Send samples and best price to Honeymoon Products Co., 39 E. Henry St., River Rouge, Mich.

WANTED—Extracted honey in ton lots or more. Send samples and quote price delivered here. C. J. Morrison, 1235 Lincoln Way West, South Bend, Ind.

WANTED—White clover and light amber honey. Any amount. Cash at time of delivery. Clover Blossom Honey Co., 712 Kossuth St., Columbus, Ohio.

HONEY WANTED—Truck or carload lots delivered to Sioux City, Iowa. Write us at Wendell, and submit sample. R. D. BRADSHAW & SONS, Wendell, Idaho.

WANTED—All grades of comb and extracted honey. Bee supplies and honey containers for sale. Prairie View Honey Co., 12243 12th St., Detroit, Mich.

WANTED—We pay cash top price for clover honey in 60-lb. tins. Any quantity. Send samples and best prices. Cloverdale Apiaries. F. M. Babcock, Fredonia, N. Y.

WANTED—White and light amber extracted in 60's. Also beeswax. Send samples with best CASH price. We carry complete line of Owens-Illinois new "DURA-GLASS" honey containers. Honey and wax accepted in payment. ALEXANDER COMPANY, 819 Reynolds Rd., Rt. 3, Toledo, O.

BEES AND QUEENS FOR SALE

ITALIAN BEES and Queens for sale at standard prices. Plantersville Apiaries, Plantersville, Miss.

CAUCASIANS, package bees, and queens. Write for 1943 prices. Lewis & Tillery Bee Co., Greenville, Ala.

BRIGHT ITALIAN AMERICAN QUEENS. Wintered in strong nuclei, 70c each. D. W. Howell, Shellman, Georgia.

HOLLOPETER'S Italian queens, untested, 80c; tested, $1.50. WHITE PINE BEE FARMS, ROCKTON, PENNA.

THREE - BANDED Italian bees and queens. Let us quote you prices for 1943. Alamance Bee Company, Geo. E. Curtis, Mgr., Graham, N. C.

CAUCASIAN BREEDERS ONLY—Laying queens, 75c; tested, $2.00; 2-lb. package and queen, $2.30; 3 lbs., $3.00. Miller Bros., R. D. 1, Three Rivers, Texas.

FOR SALE—C. B. Hamilton's apiaries, all equipment. Certificate of inspection at time of sale. If interested, write to Mrs. Hamilton, 700 So. Leroy, Fenton, Mich.

GREEN'S Italian queens. Do you want the best to be had at a price you can afford to pay? 50c each any number. Start shipping about March the first. D. P. GREEN, Deland, Fla. R. 2.

THE NORMA ROY APIARIES. Italian bees combless, 2-pound with queen, $2.50; 3-pound with queen $3.00. Live delivery and a healthy certificate. No deposit required. Norma E. Roy & Son, Hessmer, Louisiana.

FOR SALE—Bee business consisting of 100 colonies of bees guaranteed disease free, wood working shop, extracting house, and 5 room dwelling. Write Lloyd Lucas, Rt. 1, Winter Park, Fla.

FOR SALE—400 colonies bees, with locations. Bees guaranteed free from disease. Opportunity for package bees. S. E. McClendon, 403 East Clay St., Thomasville, Ga.

PACKAGE BEES AND QUEENS. Hustling Italian stock. Prompt and reliable service. Reasonably priced. Write for circular. Crenshaw County Apiaries, Rutledge, Ala., U. S. A.

MISCELLANEOUS

BEE OUTFIT to work on shares or buy. Ohmert Honey Co., Dubuque, Iowa.

WANTED: Four-frame honey extractor (automatic reversible). Joe Finfera, Lyons, Ohio.

WANTED—1½ to 2 h. p. Garden Tractor, good condition. Frederick Hahman, Altoona, Pa.

WANTED—Bees and beekeeping equipment, 45 or 50 frame extractor. C. W. Schrader, Waterville, N. Y.

WANTED—Old bee books and magazines. Will pay cash for same. Send list to American Bee Journal, Hamilton, Illinois.

WANTED — All - wire queen excluders State price, and quantity. R. H. Gillespie, Exchange Building, Little Rock, Ark.

WANTED—Steam two tube uncapping knife and boiler; 4-frame Jumbo extractor, rev.; a few colonies bees. P. O. Box 54 Corinth, Ky.

MAKE US an offer on 800 used 2 or 3 pound empty package bee cages. Will trade for bees. L. S. GRIGGS & SON, 711 Avon St., Flint, Mich.

HONEY WANTED
Carloads and less than carloads. Mail sample and best prices in all grades.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

WANTED--Extracted Honey All Varieties
Send samples and delivered prices to
JEWETT & SHERMAN COMPANY
Cleveland, Kansas City and Brooklyn

WANTED—White and amber extracted honey. Fancy comb, also No. 1 comb honey. Comb honey in shallow extracting frames. Beeswax. We render old comb into wax. Prompt remittance. Write us.
THE FRED W. MUTH CO. • CINCINNATI, O.

Our price list for 1943 is now ready. Write for your copy. Our service will be the best possible under prevailing conditions. Orders booked and shipped in rotation.

Caucasian Apiaries
Castleberry, Ala.

PACKAGE BEES and QUEENS

Gentle three-band Italians that have stood the test for 20 years, and made me a host of friends. They will do as much for you.
In addition to above strain I will be able to furnish a limited number of packages headed with daughters of queens breed for resistance to A.F.B.
As I have never had any disease in my bees I cannot attest to their resistance to A.F.B. But am breeding from stock procured from University of Iowa. They are a bit harder to handle than Italians, but from a honey making standpoint, I don't think they can be excelled.

— Prices either strain —

	Queens	2-lb. with queen	3-lb. with queen	4-lb. with queen
1- 24	$0.90	$2.95	$3.80	$4.60
25- 99	.85	2.80	3.60	4.35
100-499	.80	2.65	3.40	4.10
500-up	.75	2.50	3.20	3.85

Place your order early and avoid delay.
A. E. SHAW **Shannon, Miss.**

DIXIELAND'S LEATHER COLORED ITALIANS

A strain of bees that has been selected and tested over a number of years for all of the best qualities that are necessary for producing honey. We have received proof, and you will also receive proof that they have all of these good qualities of producing honey when you try them.

	Queens	2-lb.	3-lb.	4-lb.
1- 24	.90	$2.95	$3.80	$4.60
25- 99	.85	2.80	3.60	4.35
100-499	.80	2.65	3.40	4.10
500-up	.75	2.50	3.20	3.85

Due to war time conditions orders must be placed early as possible to receive prompt delivery.

You must be satisfied!

Dixieland Apiaries

Greenville, Alabama

Sullivan's Apiaries

Established 1931; Sullivan's Apiaries to 1938; Sullivan, Wright & Co., 1938 to 1942. Now, Sullivan's Apiaries.

Price.	Queens	2-lb.	3-lb.
1 to 24	.90	$2.95	$3.80
25 to 100	.85	2.80	3.60

Prompt, honest, courteous, and dependable service.

SULLIVAN'S APIARIES
Gilbertown, Ala.

V . . . —
THREE-BANDED ITALIAN QUEENS

If you are in the market for package bees in 1943, and want the best for your money, then be wise and buy my three-banded Italian Bees. Write for prices.

J. P. CORONA

Box 124 Kenner, La.

BUY U. S. WAR BONDS AND STAMPS

WANTED—Large or small lots of bees for cash. In draft cases, etc., will operate bees on shares. Twenty years in business. References furnished. Weldon Bee Farms, Moorhead, Iowa.

WANTED 1,000 or more colonies of bees completely equipped Standard hives, free of disease, located in Southern Minnesota or Northern Iowa. Write Box 17, Gleanings in Bee Culture, Medina, Ohio.

HELP WANTED

TWO HELPERS with some experience. State age, height, wages expected. etc. Soder Apiaries, Stratford, Iowa.

WANTED—Experienced man to work in an apiary of 1000 colonies for the coming season, prefer single man. Chas. Phillips, Fromberg, Mont.

WANTED—Apiary help. Give wages, height, weight, age, references in first letter. Good opportunity. Deer Creek Apiaries, Columbus, Ohio.

WANTED: One experienced package man or queen breeder, also one helper with some experience. W. J. FOREHAND & SONS, Fort Deposit, Ala.

WANTED: Man who can earn top wages in the production of extracted honey. Give full particulars in first letter. Blake Shipton, 2419 So. Lemon Street, Sioux City, Ia.

WANTED—Experienced bee-man, married or single; also helper with some experience. Write full particulars including age, experience, wages. Barrett Apiaries, Howell, Michigan.

WANTED — Experienced or inexperienced help. Give age, weight, height, and experience, with wages expected, room and board included. SCHULTZ HONEY FARMS, RIPON, WIS.

WANTED — Experienced beekeeper for season. Give full particulars of yourself, including experience and wages wanted with board, room, and laundry. Leland Farnsworth, Davison, Mich.

WANTED—Man to work in large apiaries consisting of 6000 colonies of bees. Must have some experience. Good wages and opportunity to man who will qualify. Give qualifications and experience. Powers' Apiaries, Parma, Idaho.

WANTED for season of 1943, help in system of 23 apiaries, about 1000 colonies. Must be strong and reliable, preferably with some experience. Possibly a permanent job, with opportunity for share of returns. Ray C. Wilcox, Odessa, N. Y.

WISH TO EMPLOY honest reliable helper in commercial apiaries. Must be willing and able to work. Good pay to right man. Experience preferred but not required. State qualifications, age, weight, height. Archie Coggshall, Slaterville Rd., Ithaca, New York.

WANTED—An experienced man in queen-rearing, honey production and honey packing house, year round job. State age, experience, and wages expected. Can furnish house for married man. If using intoxicating drinks, need not apply. J. W. Reitz, Summerfield, Rt. 1, Florida.

WANTED—Young men interested in bees and willing to work, as helpers. Some from April fifteenth to November first, others from June fifteenth to September first. Board and lodging furnished. State age, height, weight, education, experience, references, wages expected in first letter and enclose small photo. Oscar H. Schmidt & Sons, Route 4, Bay City, Mich.

WANTED—Man for coming season, some experience preferred. Start early. Good wage with board furnished. Give particulars in first letter. Fred D. Lamkin, Union Springs, New York.

MAGAZINES

THE INDIAN BEE JOURNAL—The only bee journal in India. Sample copy free. Yearly, 7c6d. Apply Editor, Indian Bee Journal, Jeolikote, Dist., Nainital, U.P., India.

A BEE JOURNAL edited and published for Western Beekeepers. One dollar per year. Clubbed with Gleanings for $1.75 per year. Western Honey Bee, 3905 Lemon St., Riverside, California.

CHICK - RAISERS profit by reading America's leading poultry magazine. Newest ideas on brooding, feeding, disease control, marketing. One year 25c; five years $1. Poultry Tribune, Dept. 19, Mount Morris, Ill.

READ the South African Bee Journal to be conversant with conditions from far afield. Subscription 5/ per year. For further particulars, write to the Hon. Treasurer. P. O. Box 43, Cleveland, Johannesburg, S. Africa.

WESTERN CANADA BEEKEEPER, official organ of the Manitoba Beekeepers' Association, one year, $1.00; in combination with one year's subscription to Gleanings in Bee Culture, $1.60. Wallingford Building, Winnipeg, Canada.

THE BEEKEEPERS MAGAZINE, published monthly, brings you the News from the field of beekeeping. Subscription: $1. a year. Single copy of current issue, 10c. THE BEEKEEPERS MAGAZINE, 3110 Piper Road, Lansing, Michigan.

MANY BEEKEEPERS have proven raising fox, mink, nutria, muskrats, rabbits, highly profitable. Send dime for sample copy. Canada's oldest fur farming magazine telling how. Fur Trade Journal of Canada, Box 31, Toronto, 2, Ontario.

THE BEE WORLD—The leading Journal in Great Britain and the only international bee review in existance. Specializes in the world's news in both science and practice of apiculture. Specimen copy post free, 12 cents stamps. Membership in the Club, including a subscription to the paper 10/6. The Apis Club, L. Illingsworth, The Way's End, Foxton, Royston, Herts, England.

SEEDS

KOREAN LESPEDEZA HIGH QUALITY $2.00 bu. Hardy Alfalfa $18.70, Grimm $19.80. New Timothy $2.40. Sweet Clover, Scarified $4.90—Unhulled $2.70. Red Clover $13.80. Clover-Timothy Mixed, $4.50. All Triple Cleaned. Guaranteed Satisfactory. Hybrid Corn $2.25. Write Free Samples—Catalog. Frank Sinn, Box 482, Clarinda, Ia.

6 BASSWOOD SEEDLINGS, 18 inch, or 6 Marrowii Honeysuckle shrubs, 18 inch, postpaid for $1.00 bill. We specialize in nectar and pollen producing nursery stock. Free circular, also of our new "Combined Controlable Feeder and Swarm Control Board" postpaid for $1.75. A local Lewis-Dadant dealer. NICOLLET COUNTY NURSERY, St. Peter, Minn.

POSITION WANTED

POSITION WANTED. Experienced hand in queen-rearing, package bee, and honey production. References. Lewis Spaulding, Rt. 2, Box 1508, St. Petersburg, Florida.

HERIER'S
SELECT - ITALIAN
Package Bees - Queens.

From
Stock Producing Maximum Crops.

Large Vigorous Queens.

Young Bees - No Drones.

Comb and Chunk Honey Builders.

Fast Evening Express North.

Safe Arrival—Satisfaction.

A Select Young Queen In Each Pkg.

	2 lb.	3 lb.	4 lb.	Queens
1- 24	$2.95	$3.85	$4.75	90c
24- 99	2.80	3.65	4.50	85c
100-249	2.65	3.45	4.25	80c
250—	2.50	3.25	4.00	75c

IN U. S. FUNDS

High Quality — Prompt Service

R. B. HERIER CO.
Valdosta, Ga. U. S. A.

Caucasian Package Bees and Queens for 1943.

Write for prices and particulars.
We will appreciate your business.

BOLLING BEE CO.
Bolling, Ala.

Package Bees and Queens
EUGENE WALKER
357 Indiana St.
GRIDLEY, CALIF.

1943 Prices

Italian Package Bees with queens, 2 lbs., and queen, $2.75 each. 3 lbs., and queen, $3.45 each. 4 lbs., and queen, $4.15 each. 15% down books order. Health certificate, full weight, safe delivery guaranteed. Address

HESSMER BEE FARM
Hessmer, La.

BUY U. S. WAR BONDS AND STAMPS

XUM

GLEANINGS MARKET PLACE

The following listings are made as a service to our yearly subscribers. (No honey or package bees). All listings must be sent in before the 10th of the month. Transactions are between owner and buyer.

— — —

For Sale—35 standard and Jumbo double-walled hives in perfect condition less metal covers. Myron R. Frisque, Van Buren St., Green Bay, Wisc.

Several complete hives with supers, some not uncrated, some assembled and painted. Over 30 pounds of foundation. J. W. Arnold, Ashland, Wisc.

Wax Press, home made, well built, suitable for a beekeeper with a small number of colonies. Does good work, saves wax. Instructions for use furnished. $5.00. Gerald Saur, Ft. Atkinson, Wisc.

One single tub "Root Wax Press," in good shape. Price $8.00 C. A. Kroh, Verdon, Nebr.

One Dadant 2-frame reversible with two sets baskets, 10x16 and 12x16. Extractor in good condition. $28.00 f.o.b. Rankin, Ill., Alfred P. Johnson.

One 4-frame extractor and Root uncapping can. Leonard A. Otto, Forest Jct., Wisc.

(Continued from page 101)

habits that it possesses of working one kind of flower at a time make it a more effective pollinator than an insect that visits all flowers promiscuously. . .

And finally the honeybee is the only one of the insect pollinators that man has under his control or domesticated, so to speak. All the rest are subject to all the vicissitudes, of nature, including unfavorable weather conditions, food shortage, which cannot be supplied, and the inroads of natural enemies, including Man. Man through his varied, often thoughtless and multitudinous activities, is the greatest disturber of the natural order of things, and what he does he must pay the price for in one manner or another. However, by studying the ways of nature he often corrects his errors and when he needs a general flower pollinator he has but to try the honeybee.

Vansell, G. H., and deOng, E. R.

1925. A survey of beekeeping in California and the honeybee as pollinizer. Calif. Agr. Expt. Sta. Cir. 297, 22 pp.

pp. 17-18: Of all the insects that visit flowers, bees are the best adapted by the structure of the body to act as carriers of pollen. The body and legs are covered with heavy, stiff hairs which are branched or featherlike. These catch and hold the pollen grains, until they are brushed into a "pollen basket" on the hind leg. In this carrier the load of pollen is transported to the hive. However, all bees are not of equal value as pollinizers as some of them do not visit all types of flowers. The honeybee and the bumblebee, however, visit almost all flowers with little restriction except that they evidently confine themselves to a single species on any one trip.

Copies of Circular E-584 can be obtained for general distribution without charge from the Bee Culture Beltsville Research Center, Beltsville, Md. Beekeepers should get a copy to show to their fruit-growing neighbors who are using poisonous spray on their fruit trees. They should also acquaint themselves with all of the facts concerning the function of the bees in pollination of agricultural products. All officials outside of the Department of Agriculture as well as within Agriculture itself must be kept informed on the value of this industry.

Gaspard's Quality Italian Package Bees & Queens

We urge you to book your order early, save the rush, and reserve shipping date, only 20% will book your order. Balance at shipping time. Prices as follows:

(Combless Packages with queens)

Lots of	Queens	2-lb. Pkg.	3-lb. Pkg.	4-lb. Pkg.	5-lb. Pkg.
1 to 9	$0.95	$2.90	$3.75	$4.55	$5.25
10 to 24	.90	2.75	3.55	4.30	5.00
25 to 49	.85	2.65	3.40	4.10	4.75
50 to 99	.80	2.55	3.30	4.05	4.70
100 or more	.75	2.50	3.25	4.00	4.65

(Comb packages with one Standard frame of brood, with queen)

Lots of	2-lb. Pkg.	3-lb. Pkg.	4-lb. Pkg.	5-lb. Pkg.
1 to 9	$3.50	$4.35	$5.15	$5.85
10 to 24	3.35	4.15	4.90	5.60
25 to 49	3.25	4.00	4.70	5.35
50 to 99	3.15	3.90	4.65	5.30
100 or more	3.10	3.85	4.60	5.25

Safe live delivery guarantee, and a health certificate with each shipment.

J. L. GASPARD - Hessmer, La.

BEEKEEPERS' SUPPLIES REPAIR QUOTA INCREASED

Since writing the editorial appearing on page 98 Gleanings has received the press release shown below, dated January 14, relative to the quota under Farm Equipment Limitation Order L-170. The War Production Board Limitation Order when originally published called for a repair quota of 130% of the average of the two years 1940 and 1941. The press release refers to the increase in terms of the year 1940 so that the average for the two years would probably be a somewhat lower quota than stated in the press release but nevertheless it indicates that the Farm Equipment Program is being given greater consideration by the War Production Board and the Department of Agriculture.

Since many items, such as sections, super foundation used in sections and chunk honey, as well as a liberal percentage of bee hive production have been permitted to fall under the repair quota, any increase in the quota will substantially increase the permitted production of bee hives and to a lesser degree will increase the permitted production of other equipment such as extractors, smokers, veils, etc. The original discussion of the War Production Board Limitation Order L-170 appeared in the December issue of Gleanings in Bee Culture on page 746.

For Immediate Release

Thursday, January 14, 1943 WPB-2366

The Requirements Committee of the War Production Board today approved the Department of Agriculture's request for an increase in the program covering production of repair parts for farm machinery and equipment.

This additional production will receive the top priority rating AA-1—the same recently assigned to delivery of critical material necessary to manufacture other types of farm machinery included in the current program.

Limitation Order L-170, issued October 19, 1942, covering farm machinery programmed for 1943, provided that repair parts be produced at a rate of 137 percent of 1940 production. Under the increase granted today, repair parts can be produced at a rate of 167% of the output of three years ago.

In addition to the above we have received information that indicates Limitation Order L-170 is being amended to substantially increase quota of both bee hives and metal equipment. Exact percentages are not available as we go to press but announcement of these is expected soon. It is hoped supply manufacturers can increase production schedules rapidly enough to care for beekeepers' needs in time for this season.

Short manpower and hard-to-get material will still be two important limiting factors which supply manufactures will still have to face.

Root QUALITY BEE SUPPLIES

We plan to give you the best service possible under present day conditions. Mail your order as soon as you can and we will advise what kind of delivery we can make.

• • •

For Prompt Service
Write

M. BECK

510 N. Cedar St., Lansing, Mich.

SHIP YOUR BEESWAX
CASH OR TRADE

Quality Bred Three-Banded Italians
BEES AND QUEENS

Customers with life time experience in rearing queens and shipping package bees. You can't find any one who will serve you better than I can. So let me book your order now.

Prices on Queens and Package Bees with Queens.

Lots of	Queens	2 lb. Pkgs.	3 lb. Pkgs.
1 to 24	$0.85	$2.80	$3.75
25 to 49	.80	2.60	3.60
50 to 500	.75	2.50	3.50

Farris Homan
Shannon, Miss.

YORK'S PACKAGE BEES AND QUEENS

QUALITY BRED ITALIANS

This is 1943 and business as usual is out for the duration. Material or supplies rationed or restricted and labor scarce. Our greatest job is to win the war, think of our boys, and serve our country to the very best of our ability. Repair and put into service all idle equipment to increase production. Place your orders early for package bees. Prices for young laying queens and package bees with queens as follows.

Quantity	Queens	2-lb.	3-lb.	4-lb.	5-lb.
1 to 24	$.90	$2.95	$3.80	$4.60	$5.35
25 to 99	.85	2.80	3.60	4.35	5.05
100 to 499	.80	2.65	3.40	4.10	4.75
500 up	.75	2.50	3.20	3.85	4.45

Small queen orders shipped by mail postpaid. Package bees by Express collect. Prices in U. S. funds or equivalent. We are now booking orders. Order direct from this advertisment, save time.

YORK BEE COMPANY

JESUP, GEORGIA, U. S. A.

(The Universal Apiaries)

BETTER-BRED QUEENS Three-banded Italians

DO YOU GET YOUR MONEY'S WORTH when you buy bees or queens ? ? ? Ask yourself this question, then place your order with us, and the answer will be YES ! ! ! Be wise and book your order early.

	Queens	2 lb.	3 lb.	4 lb.	5 lb.	all with queens.
1 to 24	$.90	$2.95	$3.80	$4.60	$5.35	
25 to 99	.85	2.80	3.60	4.35	5.05	
100 to 499	.80	2.65	3.40	4.10	4.75	
500 up	.75	2.50	3.20	3.85	4.45	

CALVERT APIARIES, CALVERT, ALABAMA

THIS YEAR

We will have only queens of our U. S. Government strain. They are bred for Resistance, Leather-colored, Pure Italian. We are certain this is the most prolific strain we have ever seen. We are glad to have them to offer.

	Queens	2-lb. Bees	3-lb. Bees
1 to 5	$1.00	$3.00	$3.90
6 up	.80	2.80	3.60

R. L. BERNELL

R. 4, Box 270, New Orleans, La.

ASKED AND ANSWERED

(Continued from page 103)

hole in the center with the queen excluder over it. I will give them a ripe queen cell. The queen will fly out through a side entrance. What per cent would mate?—Oliver Stennett, California.

Answer.—Your proposed method of rearing 150 queens as outlined in your letter should work to fairly good advantage provided colonies are strong at the time the brood is raised to the third story, also that the weather be reasonably warm and that there be an abundance of drones available for successful mating. In queen-rearing apiaries operated commercially, quite a percentage of queens fail to mate, at least about 10%. It would be reasonable to assume that a larger percentage than this would fail to mate by the method you have in mind. It seems that mating boxes on the ground are more successful than when they are up in the air or when they occupy the third story over an inner cover. Just why this is so we are unable to say. We believe that in many instances the virgins, when they return from their mating flights, enter the bottom hive instead of the top hive and in that case will destroy the old queen below.

HONEY PRODUCERS

1943 presents great possibilities for you

Honey has moved well and at a good price the past season. We understand that a 12c ceiling has been placed on honey, which is good.

Place all your equipment in use next spring by purchasing.

Italian Package Bees and Queens

with Quality Imported Strain

They are GENTLE, PRODUCTIVE, CONSERVATIVE of stores, and WINTER well.

One trial and you will see the difference.

2 lbs. with young untested queen. $2.50
3 lbs. " " " " 3.20

P. P. orders add 10 cents per package plus postage.

"THEY PRODUCE"

We have supplies for cages, and bees are in good condition. Reserve your shipping date by placing your order NOW.

Rossman & Long

P. O. Box 133 Moultrie, Ga.

Mail card for literature and prices.

PUETT'S

PERFECT PACKAGES

MADE AND KEPT PERFECT BY AIR - CONDITIONING

The **MODERN** way

Our Government asks that every one of us do our utmost in the production of all vital necessities. Will YOU do your part?

We confidently expect to far exceed all previous years in production and supplying

THREE-BANDED ITALIAN PACKAGE BEES AND QUEENS

Air-Conditioned Packages with caged queens:

Quantity	2-lb.	3-lb.	4-lb.	Ex. Queens
1- 24	$2.95	$3.80	$4.65	$0.90
25-100	2.80	3.65	4.50	.85
100-500	2.65	3.50	4.35	.80
Above	2.50	3.35	4.20	.80

For Loose-Queen type, add $1.00
For queenless packages, deduct 80c

Place your order early.
Promptness is your best insurance policy.

THE PUETT COMPANY, Hahira, Ga.

JUST NEWS

(Continued from page 99)

colonies, yields in general were disappointingly low. Production per colony averaged only 46 pounds as compared with the long-time average of 70 pounds per hive. Approximately 17 million pounds, or 86 per cent of the total production is reported to be light honey as compared with 92 per cent in 1941.

• • •

"How To Use Honey With Rules and Recipes" is the title of an excellent circular, No. 2528, put out by the University of Illinois, Dept. of Agriculture, Extension Service, written by Sara I. Moyer, Instructor in Home Economics. It covers the subject of honey rules and care, honey in cakes, differences in honey, beverages, bread, candy, cookies, desserts, meats, vegetables, salads, salad dressings, sauces, and relishes. The work appears to be exceptionally well done and we recommend it to all Illinois beekeepers who doubtless can obtain a copy by writing to the University of Illinois Extension Service. Those outside of the state probably can obtain it by sending 5c to cover postage.

• • •

Leaflet No. 113 entitled, "Honey and Some of Its Uses," is still available at 5c per copy. While issued some years ago it contains a great deal of information as useful today as at the time it was written. If any of our readers would like to secure a copy of this leaflet, write the Supt. of Documents, Washington, D. C.

• • •

Winners in our recent wax contest are as follows: First prize: H. A. Ross, Poseyville, Indiana; Second prize: Brother Pancratius, St. Mary's College, North East, Pa.; Third prize: Spencer Baird, Fayetteville, New York.

• • •

The Canadian Wartime Prices and Trade Board, Directive No. 19, to Can Manufacturers and Honey Packers, Re Honey Pails: (1.) Notwithstanding sections 2, 3, 5, 6 and 8 of Order A425, Can Manufacturers are authorized without special permit to sell and deliver to Honey Packers, consistent with the manner in which they are lithographed, honey pails of 4 lb. and 8 lb. size now in their possession. (2.) Honey Packers are authorized to accept and use as required any honey pails which may be received by them from Can Manufacturers under the provision of paragraph one above. (3.) Honey Packers are authorized to use, as required, for the packing of honey, any tinplate containers which they have on hand unused December 31st, 1942. (4.) For the information of Can Manufacturers and Honey Packers, this Administration is considering the provision of a reasonable number of 70 lb. tinplate containers for the bulk handling of honey of the 1943 crop and the use of 2 lb. and 4 lb. all fiber or composite cans. A definite decision will be announced well ahead of the honey packing season.—L. F. Burrows, Administrator of Metal Containers, Ottawa, Canada.

• • •

Harold J. Clay of Washington, D. C., in a recent issue of "Marketing Activities" writes the following:

"Had you thought that the bee is the only insect effective in pollination whose population and movement can be controlled by man? The statement has frequently been made that the value of bees for pollination is more than 10 times the value of the honey and the beeswax they produce. And now that farm labor is so scarce, the role of bees in the production of seed places them among the essential agricultural workers in most sections of the country in which fruits, vegetables, and field crops are produced."

• • •

A CORRECTION

On page 31 a mistake was made in the plan of imbedding four wires at a time. The plan works best when the ⅞ board is not used, that is, when the wires are underneath and the foundation on top. The weight of the glass imbeds the foundation down into the wires as soon as contact is made and through the glass one can see the wires moving up into the foundation.

By the plan as given in the January number, I find that it requires a 5-lb. weight on the frame containing the foundation. With the wires underneath, as mentioned above, no weight is needed and it works much better.—Bro. Andrews, Island Creek, Mass.

• • •

OUR COVER PAGE

The picture on our cover page was taken by J. H. Jamison, Ada, Ohio. A beautiful queen is shown in the center of the photograph.

This photo shows a portion of one of our queen yards, containing over 6,000 nuceli.

ITALIAN BEES AND QUEENS

2-lb pkg. with qns., $3.00; 3-lb. pkg. with qns., $4.00. Extra qns., $1.00.

OVERBEY APIARIES - Bunkie, Louisiana

APPLE A LA HONEY

(Continued from page 77)

cool place overnight. When ready to serve, unmold, cut in slices and serve with honey-sweetened cream, plain or whipped.

Honey Apple Fritters

One cup sifted enriched flour, ⅓ teaspoon salt, 2 eggs, ¼ cup honey, 1½ cups pared, chopped apples, ¼ teaspoon cinnamon, and ¼ cup milk.

Combine flour and salt. Beat eggs well, add honey, chopped apples, cinnamon and milk. Add dry ingredients and mix until smooth. Drop by spoonfuls into deep hot fat. Fry until evenly browned. Drain on paper towelling. Sprinkle with powdered sugar, if desired. Serve with honey.

Honey Cinnamon Apples

Six small apples, ¼ cup red cinnamon candies, 1½ cups honey, 1½ cups water.

Wash apples. Pare thinly and core. Combine honey, water and cinnamon candies. Simmer 5 minutes. Add apples. Cook slowly until tender. Stick cinnamon, or cinnamon extract and red food coloring may be substituted for the cinnamon candies if candies are not available.

Honey Apple Sauce Cup Cakes

One-half cup brown sugar, ½ cup shortening, ½ cup honey, 1¼ cups unsweetened apple sauce, 2 cups sifted pastry flour, 1¼ teaspoons salt, 2 teaspoons soda, 1 teaspoon cinnamon, ½ teaspoon nutmeg, ½ teaspoon cloves, ½ cup raisins, and topping.

Cream shortening and brown sugar together until light and fluffy, add honey gradually and blend thoroughly. Stir in apple sauce. Add flour sifted with soda, salt and spices. Then stir in raisins. Fill well greased muffin tins or paper baking cups two-thirds full. Brush with topping and bake in a moderate oven, 375 degrees F., about 25 minutes.

Honey Topping

One-fourth cup butter, melted. 1 cup chopped walnut meats and 2 tablespoons honey.

Combine and mix well.

Aurora, Nebr.

• • •

TALKS TO BEEKEEPERS

(Continued from page 107)

will thus be seen that it is possible to secure returns on an investment in package bees the same season. This makes such an investment more worthwhile. More will be said about the management of package bees in our next talk.

Those Having Bees

Provided colonies went into winter quarters with an ample amount of stores last fall and have adequate protection against the cold weather, there is nothing that owners of bees can do during the winter to improve the condition of their bees.

Even though hives are covered with snow, owners should not become panicky. Snow is porous and permits air to filter through to the hives. Furthermore, snow protects the hive from the cold.

If an ice storm should occur during the winter, it is well to break the ice in front of the hive entrances because, in some instances, where it remains for too long a time, it may cause the suffocation of bees.

Under no circumstances should hives be opened during very cold weather. This disturbance causes the bees to become restless and interferes with normal wintering.

In parts of the South, bees gather nectar and pollen during February. In California, and some of the Southern states bees may store some surplus in late February.

XUM

RELIABLE SERVICE RELIABLE PACKAGE BEES and QUEENS
THREE-BANDED ITALIAN BEES and QUEENS

Price list, Via Express Collect.

	Queens.	2 lb. pkg.	3 lb. pkg.	4 lb. pkg.	5 lb. pkg
1- 24	$0.90	$2.95	$3.80	$4.60	$5.35
25- 99	.85	2.80	3.60	4.35	5.05
100-499	.80	2.65	3.40	4.10	4.75
500-up	.75	2.50	3.20	3.85	4.45

Prices via mail quoted on request. Pure mating, safe arrival, prompt shipment, quality bees and Queens guaranteed.

W. E. HARRELL **Hayneville, Alabama**

QUEENS

Italians **Daughters of Resistant Stock** **Caucasians**

PACKAGE BEES

Prices on Package Bees With Queens to May 21st.

Lots of	Queens	2-lb bees	3-lb.	4-lb.	5-lb.
1 to 24	$.90	$2.95	$3.80	$4.60	$5.35
25 to 99	.85	2.80	3.60	4.35	5.05
100 to 499	.80	2.65	3.40	4.10	4.75
500 up	.75	2.50	3.20	3.85	4.65

For Tested queens, double the price of untested.

BOOKING ORDERS NOW

Over 25 year's experience shipping. Paying 43½ cents a pound for Beeswax in exchange for bees and queens. If you have over 50 pounds, write for shipping instructions. TRUCKERS HEADQUARTERS drive in 3½ miles south of Weslaco on Progresso Highway.

BLUE BONNET APIARIES, Rt. 1, Box 70, Mercedes, Tex.

One Year's Subscription FREE

Hundreds of new beekeepers have started this year. Their success is important. **"Talks to Beekeepers"** in Gleanings in Bee Culture will help them.

Mail Us:

3 One-year Subscriptions
or
2 Two-year Subscriptions
(At the Regular Rates)

And we will enter your subscription FREE for one year.

Mail to Circulation Manager
GLEANINGS IN BEE CULTURE
Medina, Ohio

THE DRONE IN RELATION TO BEE BREEDING

(Continued from page 75)

characteristics inherited can not be properly analyzed due to the unknown factors. We find the drone inherits all his characteristics from his mother and that his mother inherited her characteristics from both her mother and father.

We are unable to ascertain where the characteristics of a good productive colony come from. The workers by virtue of being able to inherit superior characteristics from the father brings up an uncertainty as to the true value of the mother queen. We must assume that the mother queen could produce an equal number of workers without giving such workers superior qualities. It is possible for the workers to possess qualities far superior to the mother due to the qualities inherited by the workers from their father. These qualities are thus reflected in the next generation of queen daughters and that is the opening for improving the stock. The immediate problem is to find the type of colony with the ability to transmit ideal characteristics to the daughter progeny. Only elaborate testing will determine the results.

Donaldsonville, La.

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4 " " " " " 4.15
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Quantity	Queens	2-lb. Pkgs.	3-lb. Pkgs.
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25-99	85c	2.80	3.60
100-up	80c	2.65	3.40

BESSONET BEE COMPANY, Donaldsonville, La.

The Monthly Honey Market

U. S. GOVERNMENT REPORT

Information from Producing Areas (Last half of December)

Indiana. Temperatures during the early part of this period were below normal but toward the end of the month the weather turned somewhat warmer and rainy. A light snow cover in most sections of the State protected honey plants. In general bees appear to be wintering very well except where stores are unusually light. However, mild, clear weather which would permit good flights would be highly beneficial. Sales per lb., extracted, Light Amber Clover, case lots 12c, small pails 16c; White Clover comb 10-11-oz. cellophane-wrapped $2.40-3.15 per case.

Illinois. The weather has been cold during most of the month of December. In most sections of the State the bees have been confined for the last four or five weeks although in some sections it was warm enough for a short flight on December 17. A good snow cover is protecting clover and since moisture conditions have been favorable all season clover plants should come through the winter in good shape. Demand for honey continues good, but supplies are getting abnormally low. Sales f.o.b. per lb., extracted Mixed Flowers Light Amber single 60s 11-12c, small pails 12½c; 1-lb. jars 15c. Beeswax 41c per lb. to beekeepers.

Kentucky. The early part of the period had considerable cold, stormy weather, while during the latter part of the month rainfall has been excessive. Bees have been confined during this entire period. Moisture conditions have been very favorable for good growth of plants. Sales of beeswax reported at 41½c cash and 43½c in trade f.o.b. shipping point.

NORTHEASTERN STATES

New York. Temperatures were extremely low during the forepart of this month, reaching 30° or more below zero in the northern and mountainous portions of the State. In the southern and western sections of the state it warmed up toward the end of the month and bees were able to obtain one or two short flights. Clover and other honey plants were well protected by a good snow blanket. In general bees appear to be wintering fairly well although some colonies are light in stores despite fairly heavy feeding last fall. Relatively little honey remains in the hands of producers although a few fairly large lots are being held to meet local demand or because producers are reluctant to sell at this time. Very few sales were reported. Sales f.o.b., per lb., extracted, White Clover or Mixed Fowers 60s or more mostly 12c, few 13½c, small pails 15c.

Pennsylvania. Until the close of the period temperatures were low, dropping far below zero in the higher altitudes, and to zero in many parts of the State. The ground has been covered with several inches of snow in most sections. Consumption of stores has been heavy because of the cold weather. Sales f.o.b. per lb., White extracted 12c.

New Jersey. The early part of this period was quite cold, but it warmed up around Christmas and bees have been able to fly on a couple of occasions. Sales f.o.b., per lb., extracted, Sumac-Clover, small pails and glass jars 21-22c. Comb Mixed Flowers $4.80 per case. Beeswax, medium light 42c per lb. to beekeepers.

Vermont. Weather during this period was very cold, ranging to as low as 25° below zero, with almost a week of below-zero temperatures. During the latter part of the period, however, temperatures have moderated considerably. The snow cover in most sections is rather light. Bees appear to be wintering well. Demand continues active, with supplies nearly cleaned up. Sales, f.o.b., per lb., extracted Clover, small pails 15c, 1-lb. jars 17c.

SOUTH ATLANTIC STATES

Maryland. Considerable cold weather prevailed during the early part of the period, with several light snows. However, around the 25th it warmed up rapidly and bees were able to make a much-needed flight. In some sections quality of winter stores is not considered to be the best since bees gathered considerable honeydew last season, and any long period of confinement might be quite serious.

SUMMARY

Snow cover has lessened during this period in the eastern part of the country, but in western United States snow has generally increased in depth and extends further southward. Temperatures have been sufficiently low so that bees have been confined to their hives throughout most of the northern portion of the country, and stores have frequently been reduced because of the exceptionally cold weather earlier in the month. Heavy losses are already anticipated by many beekeepers. In Southern California beekeepers are concerned over lack of rainfall.

Stocks of honey continue to decrease rapidly throughout the entire country. Beekeepers report inquiry for many carlots of honey which they cannot fill, and they are in fact turning down orders for many smaller lots also. Southern package bee and queen producers report a record volume of orders for this early in the season. Beekeeping leaders throughout the country are advising commercial beekeepers to place orders for both package and queens as early as possible in the anticipation that southern supplies may be inadequate next spring. Although many reports are received indicating that beekeepers are discouraged over the uncertainty of obtaining sufficient supplies for the coming season, other reports suggest that many beekeepers are planning to expand their colonies so far as equipment, gas and tire allotments, and the supply of help permits.

Many beekeepers who considered their initial gasoline allotments on their Certificates of War necessity inadequate are now applying for adjustment of mllage and

TOO LATE TO CLASSIFY

SELL to best offer, 22 three-story hives, A1. John Wharton, Greenville, Texas.

RICHEST pollen-producing wild sunflower, 50 seeds, 50 cents. Wm. Ehler, Union Grove, Wisc.

FOR SALE—Package bees, queens, and 3 and 4 frame nuclei. Write for 1943 prices. WALKER APIARIES, Lexington, Texas.

WANTED—Helper for Minnesota apiaries. Send description and wages expected. E. E. Salge, Weslaco, Texas.

WANTED—Standard ten-frame bodies of drawn combs and complete outfits equipped for extracted honey. Laverne Roose, Sac City, Iowa.

of gallonage through the County Farm Transportation Committees of their County USDA War Boards. It is understood that the intent of the Office of Defense Transportation is to maintain essential agricultural transportation as an integral part of the production and marketing of necessary foodstuffs, and the needs of beekeepers are being given careful consideration by their county committees. Because of the gasoline shortage, however, all beekeepers cannot expect to receive as much gas as they used last season.

Conservation Order M-81 of the War Production Board, as amended December 9, 1942 permits a packing quota of 100 percent of the 1942 pack of 60-lb. tins. The schedule specifically indicates that these cans are re-usable, and it is expected that they will be used as many times as their condition will permit. Already many sales reported by beekeepers, and purchases reported by packers, are on the basis of "cans returned or exchanged". Tin containers of a size smaller than the 60-lb. cans will not be available during the coming season for packing honey for civilian use.

"Forms for Computing Ceiling Prices for Packers of Extracted Honey and for Sellers of Bulk Honey—(Forms 1-A, 1-B, 1-C, Code No. 633-A)— are now available from the Office of Price Administration, Washington, D. C.; as are also copies of MPR 255 Amendments 1 and 2, "Permitted Increase for Wholesalers of Certain Foods (Including Extracted Honey)", issued December 12, 1942; and of MPR 256, "Permitted Increases for Retailers of Certain Foods (Including Extracted Honey)", issued December 12, 1942.

The final review of the season giving the number of colonies of bees and the production of honey for 1942 as estimated by the Bureau of Agricultural Economics, indicates a total production of 180 million pounds, compared with a revised production report for 1941 of 226 million pounds. Complete details by States are being mailed. The second estimate of the 1942 honey crop of Canada, issued December 22, 1942, by the Canadian Dominion Bureau of Statistics, shows a total production of 23 million pounds, or 16 percent below the 1941 crop of 27 million pounds.

Monthly Report of Honey Producers

Early in January we sent the following questions to honey producers: 1. What percent of the honey produced in your locality has already left the hands of the producers? Give answer in percent. 2. At what price has honey been sold or contracted for, if any, in large lots (carload or less) in your locality during the past month for (a) extracted per pound? (b) comb honey, Fancy and No. 1, per case? 3. What are prices when sold to grocers in case lots of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) comb honey Fancy and No. 1, per case? 4. What is the retail price to customers in your locality of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) comb honey. Fancy and No. 1, per section? 5. How is honey moving on the market in your locality? Give answer in one word, as slow, fair or rapid. 6. How does the number of colonies to be wintered in your locality compare with that of last year? Give answer in per cent. 7. What is your estimate of prospects for a normal honey crop in 1943, considering the present condition of the bees and the honey plants? Give answer in percent of average crop for your locality. The answers received are tabulated as follows:

		1.	2.		5.		4.		5.	6.	7.
							To			Colo.	Est.
Date Rec.		Per Cent	Large Lots		To Grocers		Consumers		Move-	Win-	1943
Jan.	State Name	Sold	Ex.	Comb	Ex.	Comb	Ex.	Comb	ment	tered	crop
19	B. C. (A. W. Finlay)	100	.15		.87	5.50	1.10	.30	Rapid	110	100
14	S-Calif. (L. L. Andrews)	100	.12				1.12	.25	Rapid	90	0
19	C-Calif. (Davis Bros.)	98	.12				1.05		Rapid	130	100
15	SE-Colo. (Otis E. Adcock)	100	.11½		.75		.92	.25	Rapid	100	100
11	E-Conn. (Allen Latham)	50				5.00	1.00	.30	Rapid	100	100
15	S-Fla. (C. C. Cook)	100	.09		.70		.90		Rapid	100	100
18	C-Fla. (Harry Hewitt)	100			.68		.80			100	100
15	SE-Ga. (J. J. Wilder)	97	.11		.70	.75*	.85	1.00*	Rapid	100	90
14	NC-Ills. (A. L. Kildow)	100	.12	3.00		3.00	.75	.17	Fair	100	125
11	S-Ills. (Carl E. Killion	100	.12			4.80	1.08	.27	Fair	110	100
11	NC-Ind. (T. C. Johnson)	94			.75	4.80	.85	.25	Fair	95	100
12	NW-Ind. (E. S. Miller)	95			.80	4.80	.95	.25	Fair	100	100
18	W-Iowa (E. G. Brown)	95	.12		.85		1.25		Rapid	100	100
14	N-Mich. (Ira D. Bartlett)	99			.85		1.00		Fair	100	100
11	C-Mich. (E. D. Townsend)	100								100	100
12	W-Minn. (B. L. Morehouse)	75			.78		1.00		Rapid	100	110
15	C-Nebr. (J. H. Wagoner)	55	.11½		.75		.89	.20	Fair	100	90
18	W-Nev.(Mrs. E. G. Norton)	100	.12				.80		Rapid	90	30
14	W-Nev. (Geo. G. Schweis)	100		4.25			.90	.25	Rapid	100	75
13	W-N. M. (C. A. Baltzley)	40	.10		.68		.83	.30	Fair	100	80
11	W-N. Y. (Adams & Myers)	100			.90	6.00	1.00	.35	Rapid	100	100
12	NW-N. Y. (Geo. B. Howe)	80			.80	5.00	.80	.25	Fair	100	100
12	C-N. Y. (F. W. Lesser)		.14						Fair	110	125
13	NW-N.C.(C.S.Baumgarner)	100						.25	Slow	100	90
14	SE-N. C. (W. J. Martin)	90	.09½		.85		1.00		Fair	100	100
11	E-N.D.(M.W.Cousineau)	99.9	.12				.95		Rapid	80	80
12	C-Ohio (R. D. Hiatt)	96	.12		.85		1.15		Rapid	105	110
15	NC-Okla. (C. F. Stiles)	80			.85		.95		Fair	95	90
12	C-Penn. (Harry Beaver)	90	.12		.75		.85		Rapid	90	
11	SE-Penn. (D. C. Gilham)	70	.12		.90	4.25	1.25	.25	Rapid	110	100
15	W-S. C. (E. S. Prevost)	98					.90		Fair	90	Good
13	E-Tenn. (W. L. Walling)	100					1.25		Fair	90	90
18	S-Texas (J. N. Mayes)		.08		.45				Rapid	75	80
15	S-Texas (H. B. Parks)	90			.60		.75		Fair	100	100
18	S-Va. (T. C. Asher)	90			.65	4.00	.89	.25	Fair	100	95
13	N-W. Va. (N. E. France)		.12½							100	100

* Chunk honey

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100 to 499	.80	2.65	3.40	4.10	4.75

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500 up	2.50	3.25	4.00	4.70	.80

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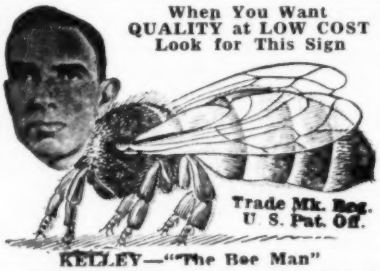

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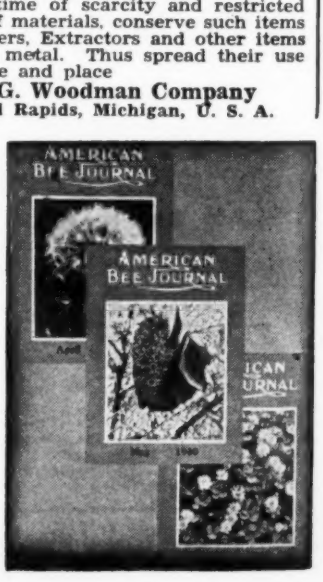

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